AUGUST 23, 1954

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

PERSONNEL IN DISTRIBUTION

Transportation in Distribution

Move Ahead with Better Traffic Management — page 89

INTEGRATE YOUR DISTRIBUTION

A PROGRAM FOR MANAGEMENT IN 1954

No. 7 in 1954 Management Series

CONTENTS — PAGE 5

Which Through-Hardening Grade of Alloy Tubing Is Best for You?

...B&W Can Supply Them All

For applications of mechanical tubing that require high strength, ductility, and resistance to impact, the medium-carbon, through-hardening steels are particularly suitable. A correlation of the properties of each available grade with your product specifications will help you determine the grade most suitable for your operation. Listed are the medium-carbon alloy steels typical of those that can be heat-treated to meet a broad range of mechanical properties. These steels all contain alloying elements introduced to provide a desirable combination of strength and ductility and to promote ease of heat treatment. In some grades the alloying elements also provide resistance to softening at higher tempering temperatures.

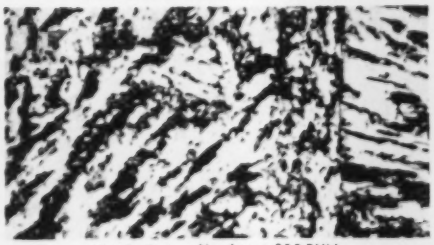
Tubing of these grades may be hot forged without difficulty by conventional methods, and in the softened state is readily machinable—a good indication of the workability common to all the medium carbon through hardening.

In the application of alloy tubing of these steels, it is often possible to use alternate grades without loss of desirable mechanical properties. You'll find Mr. Tubes—your link to B&W—always on call and invariably helpful in any discussion of your tubing requirements. You'll find B&W Bulletin TDC-141 helpful, too. Send for your copy today.

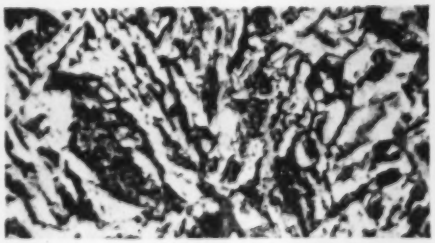
TYPICAL THROUGH-HARDENING GRADES

1340	2340	3140
4042	4140	4340
4640	5140	8640
8740	9440	

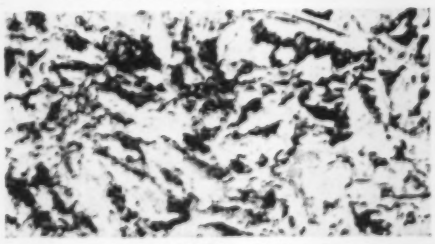
Typical Microstructures (at 1000 X) and Hardnesses, 4140 Steel



Hot Rolled — Hardness 285 BHN



Normalized 1650 F — Hardness 302 BHN



Normalized 1650 F and drawn at 1250 F for 1 hour — Hardness 217 BHN

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

B&W SEAMLESS and WELDED TUBES

TA-4027 (ASM)

Now . . . Ice-cold soft drinks in Cans

Ginger ale . . . root beer . . . orange . . . cola . . . or grape. Now available in throwaway cans, these and other delicious flavors of "pop" are making a hit from Coast to Coast.

Soft drinks in cans didn't happen overnight, of course. These new containers are the result of much research by leading can-makers who are now producing them in both cone-top and flat-top styles.

So many things you use each day come in these familiar steel containers. Vegetables, soups, fruits, frozen juices with vitamins and full flavors sealed in. And whether you're buying oil, paint or insecticide, cans give unequalled protection against light, moisture, air and dirt.

Cans are made from tin plate, thin sheets of steel which are coated with tin. Bethlehem supplies can-makers with high-quality tin plate which we produce at our Sparrows Point Plant near Baltimore.

BETHLEHEM STEEL

BETHLEHEM STEEL

RELY ON PHILLIPS FOR DEPENDABLE SUPPLY!

The storage facilities, pictured above, are part of Phillips Petroleum Company's many installations which help assure you of a dependable, year-around supply of Philgas. Pipelines carry Philgas to strategically situated underground storage facilities, with capacity of hundreds of thousands of barrels. In this manner Philgas, produced in summer, is available to meet peak demands of the winter months.

Many of this nation's leading industries are installing their own Philgas systems for core baking, mold drying, heat treating of all kinds, ceramic operations, food processing, textile finishing, metal cutting, space heating and scores of other uses. Philgas is also used as a motor fuel by many of these same industries.

Phillips experienced field-trained LP-Gas engineers will be glad to consult with you and show you how you can cut operating expenses by changing to this clean-burning, all-purpose fuel.

Philgas* **IS AMERICA'S LARGEST SELLING BRAND OF LP-GAS!**

CLEAN. There is no cleaner fuel than Philgas! Free from harmful contaminants.

UNIFORM. Processed to exacting standards. Uniform thermal value and gravity.

HIGH HEAT CONTENT. Philgas gives you plenty of heat for each fuel dollar!

AUTOMATIC. You get any desired pressure, constant temperatures and atmospheres . . . automatically! Cuts labor costs.

*Philgas is the Phillips Petroleum Company trademark for its high quality propane-butane LP-Gas or bottled gas.

Philgas
THE ALL-PURPOSE FUEL

PHILLIPS PETROLEUM COMPANY

Sales Department · Bartlesville, Oklahoma

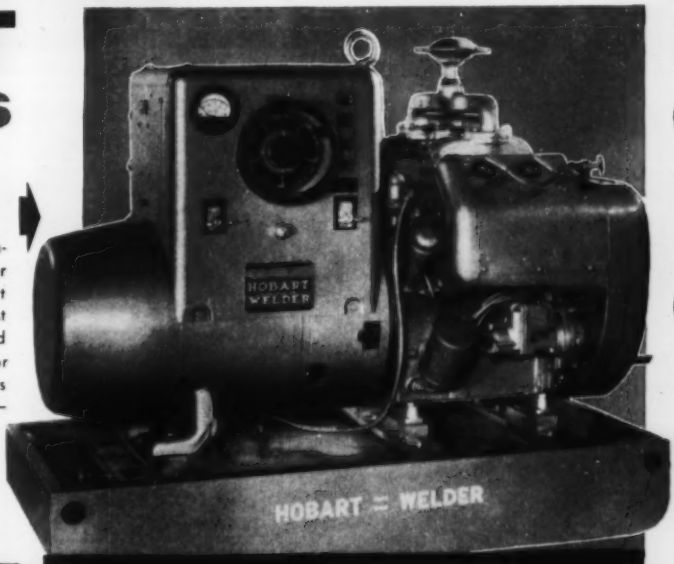
Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Indianapolis, Ind., Kansas City, Mo., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tampa, Fla., Tulsa, Okla., Wichita, Kans.

You can have EXTRA SAVINGS and EXTRA PROFITS with these new

HOBART ARC WELDERS

WELDS OR RUNS TOOLS—LIGHTS—MOTORS AND ELECTRICAL APPLIANCES

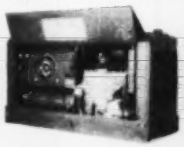
Saves costly delays, expensive replacement parts and dismantling. Get this 2 in 1 unit on the job independent of power source that lets you weld or have emergency 110/220 volt power any time, anywhere. Fast becoming one of the most valuable tools today on all types of outside construction and repair work. Lets your own men handle jobs without extra labor and cost. You'll find Hobart offers a wide range of welders and combination models to fit every welding need. AC or DC—Air Cooled or Water Cooled—With or Without Auxiliary Power—all engineered to give low cost operation and long life. Builders, repair workers and today's fabrication shops cannot afford to be without this low cost equipment.



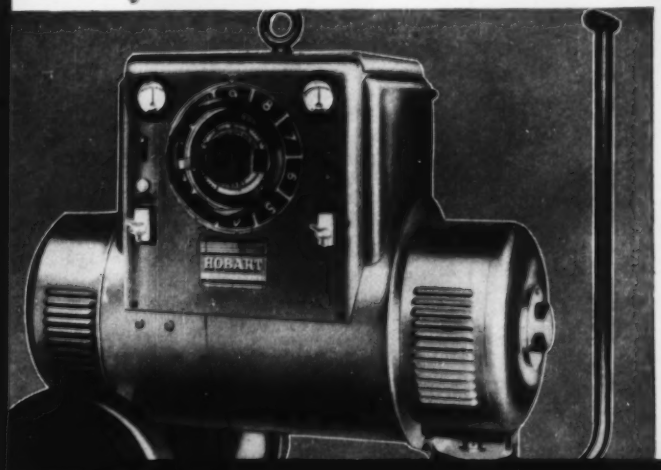
For Construction, Building and Repair

00 amp. Gas Drive

250 amp. "Pipeliner"


Welder-Power Plant

Generator Only



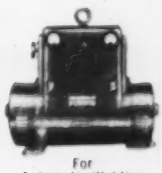
For Plant Production and Maintenance

FOR MORE WELD METAL PER HOUR, PER MAN . . .

Hobart's electric motor driven models are available in a wide variety of sizes and types, outstanding for their design and special features. Assures faster welding and top performance so important today in cutting production and operating costs. The choice of leading industries everywhere for production, maintenance and general shop welding. AC or DC — portable or stationary and the latest "POWROMATIC" CV for automatic and semi-automatic welding.

See for yourself what a Hobart can really mean to you in your work. Investigate now—no obligation—simply fill out and mail coupon today for complete information.

AC Transformer Welders


For Automatic Welding

"Bantam Champ"

HOBART electrodes. A comparison proves you get more top quality welding per day. Made for every application of AC or DC welding. State type work you do and we'll send free samples!

HOBART TROY OHIO WELDERS

● **HOBART BROTHERS CO., BOX ST-84, TROY, OHIO, *Phone 21223***

"One of the world's largest builders of arc welders and welding equipment"

HOBART BROTHERS COMPANY, BOX ST-84, TROY, OHIO

☐ FREE Weldor's Vest Pocket Guide

Send information on the items checked below:

_____Amp. Capacity ☐ Electric Motor or . . . ☐ Gas Engine Drive ☐ AC Power and AC Welder Combination ☐ Air Cooled ☐ Water Cooled ☐ Portable ☐ Stationary

FREE ◗ ☐ Electrode Samples to be used on (type of work)_____

NAME_____ POSITION_____

FIRM_____

ADDRESS_____

HOBART WELDERS, ELECTRODES

Grinding 5-Start Worm with 4" Lead

STANDARD STYLE 36 EX-CELL-O *Precision* THREAD GRINDER

In the photograph at the left the operator is grinding a worm shaft for use in a special machine. The part is about 22" long and the worm is 4½" long, 3.430" O.D., has 5 starts, a pitch of .800", a lead of 4" and a tooth depth of .5454". The worm was ground in two operations on a standard Style 36 Thread Grinder. It was rough ground from the solid, hardened, then finish ground.

For complete information and specifications on the Style 36 and other Ex-Cell-O Thread Grinders contact your local representative or write today to Ex-Cell-O.

XLO

EX-CELL-O for PRECISION

A COMPLETE LINE OF PRECISION THREAD GRINDERS

STYLE 50 Precision Thread Grinder—a versatile machine for external work, also available with internal attachment.

STYLE 33 Precision Thread Grinder—a high production machine for external work.

STYLE 39-A Precision Thread Grinder—a high production machine for internal threads.

STYLE 36 Precision Thread Grinder—a versatile machine for extra long external threads, available with internal attachment.

EX-CELL-O CORPORATION • Detroit 32, Michigan

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

55-36

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

Vol. 135 No. 8 August 23, 1954

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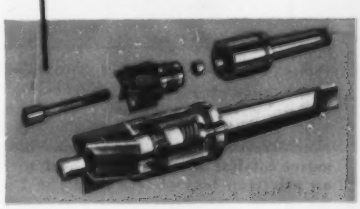
Continental
Counterbore Sets
Save Your Time—
Save Your Tools

A Twist of the Wrist engages or releases the cutters. Double lugs on cutter engage double abutments in holder. Double aligning bearings for rigidity.



Phantom view shows the strong, rigid drive for quick interchangeability of tools.

CONTINENTAL has three STANDARD COUNTERBORE SETS for your selection. They are toolroom favorites. WRITE FOR CATALOG and prices.

CTW

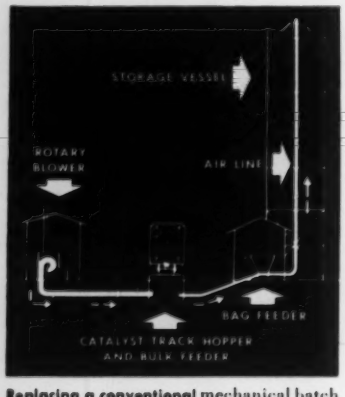
CONTINENTAL TOOL WORKS
Division of
Ex-Cell-O Corporation
Detroit 32, Michigan

34-27

(Advertisement)

what's NEW in Engineering

A new electronically-controlled manipulator has been developed by engineers at Argonne National Laboratory to permit scientists to handle "hot" radioactive materials at a distance of several hundred feet or from behind sealed barriers. The new unit, which uses electrical signals, reproduces the same seven basic motions involved in grasping, lifting, moving and turning objects.



Replacing a conventional mechanical batch system of handling catalyst, Kaiser Engineers developed a continuous air stream bulk handling method. Operating costs were reduced by this unique system which moves catalyst at 7½ tons per hour with an attrition loss of less than the 2% maximum guaranteed.

Modern Physics for the Engineer, edited by Louis N. Ridenour, is a collection of lectures given by a group of distinguished physicists and others at the University of California, Los Angeles. The aim of the book is to give engineers a brief account of some of the most interesting developments in this fundamental physical science. Published by McGraw-Hill.

Kaiser Engineers has approximately 600 professional engineers, technical experts and staff ready to tackle your problem in design, engineering or construction. Call or write: Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

behind the scenes

Instruction from An Eavesdropper

In our capacity as king's fool we go about wrapped in a cloak of immunity that may be as strong as steel or as palpable as moonlight, but the poor fool who wears it must be prepared to trust it implicitly. The arrow that strikes at noon may arrive with the compliments of the boss in appreciation of being left away out on a limb.

Wrapped in this cloak of immunity and anonymity, we are moved occasionally to comment on subjects that ordinarily would send shudders up editorial and advertising spines. At this time we are concerned with a curious anomaly that exists in the business paper field. If we begin our examination by accepting the proposition that business papers exist primarily to publish helpful information (so what else?), it follows that editors and advertisers labor alike to inform identical readerships.

We remarked on this phenomenon one day at lunch and were met by a shocked silence. However, a man at the next table had been listening surreptitiously, if you cared to disregard the fact that his ears had been rotating as briskly as those of a horse, pointing this way, now that, in a commendable effort to follow the general conversation.

"Excuse me," he said, pushing back his chair and making ready to join us. "The stuff you're talking about is right up my alley. Too many advertisers miss the boat in trade papers."

Diners Tremble

Our associates paled and caught their collective breath. Hearts skipped beating, eyebrows went up, delicate showers of perspiration burst from redactorial cuticular exhalants (we assume that is how an editor would describe his pores; an advertiser would call 'em two-way skin valves) and we got the feeling that our social acceptance was slipping.

"Don't get me wrong, friends," said our new friend. "Many advertisers are on the ball all the time, and I'd be willing to bet their gross business reflects their good judgment. But look at this!" He snatched a copy of a well known business publication from his briefcase and riffled through the pages, sending a draft over the table and a chill up our spines.

"Here's a company I happen to know has a wonderful new process. The world should know about it; the customers should know about it—so what does the company pay to publish? A cute picture about something else, introduced by a cliche, at that, and not a word that would help me or inform me if I happened to be interested in buying their stuff. I don't want cute pictures. I want facts."

Admits Ladies Are Wonderful

"And look at this! A big picture of a pretty girl wearing next to nothing, holding the product and smirking like a moron! God knows," he added piously, rolling his eyes and making like a sheik considering his harem, "I love pretty girls, but when advertisers keep throwing them at me when I want business information, I feel like I'm being propositioned instead of being informed."

We muttered that it was a shame advertisers thought so little of reader intelligence they felt obliged to trap attention by baiting their pitch with sex, gags, tricky captions and clever headings.

"Another thing," continued our crusader, "is the appearance of many of these ads. Seems to me they're designed to appeal to the aesthetic sense of art directors, and not to the practical consumer. Now, here's an illustration that's good enough to put in a museum, because I've seen junk like that at art shows, and it's on a par with the stuff my six-year-old son turns out. I don't want to look at a camouflaged product. Gentlemen, I want clear pictures, facts and helpful information in ads, and I ain't getting 'em!"

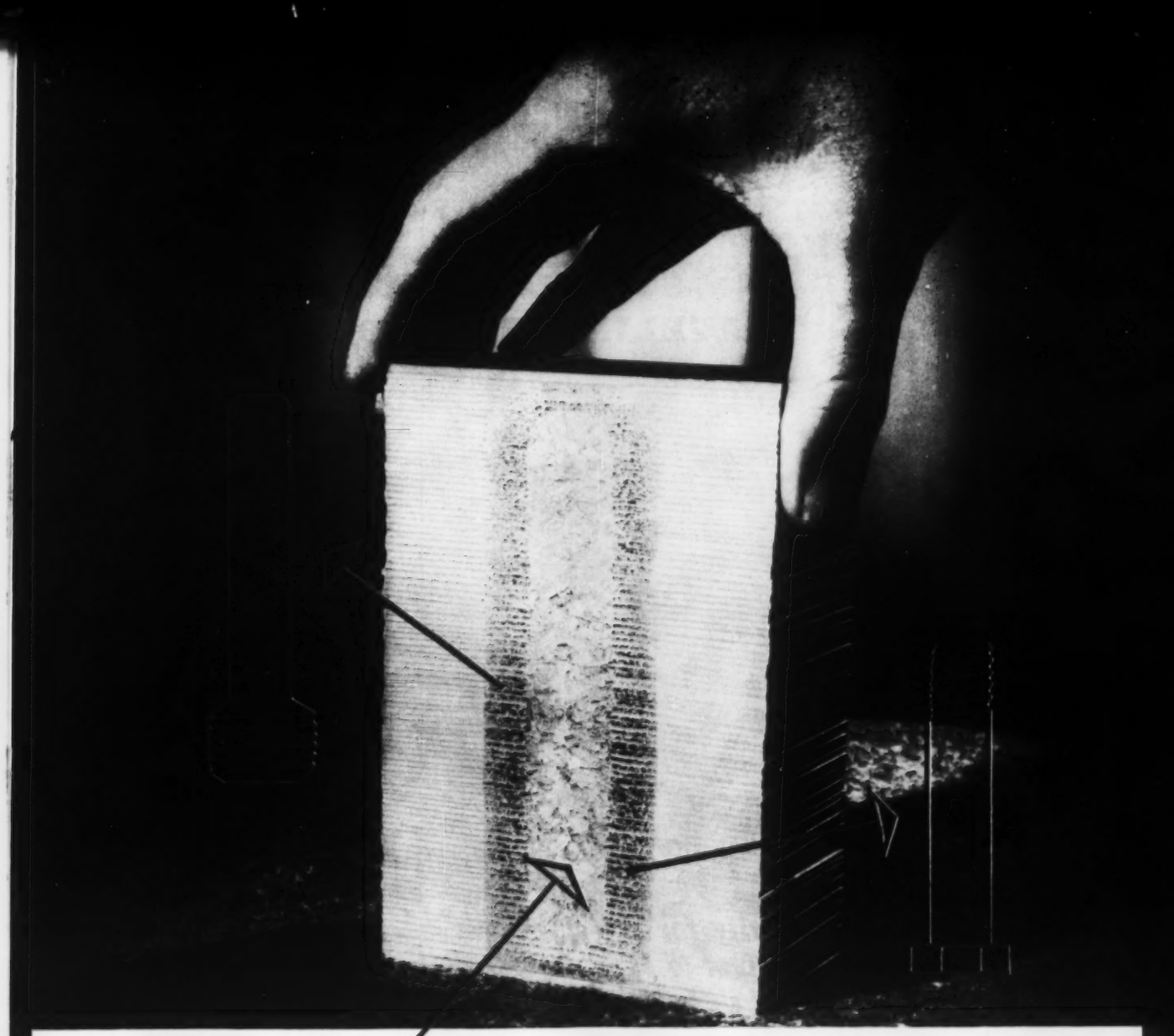
Carried away by his emotions, he tore into current industrial advertising like a horse galloping at night; he didn't know exactly where he was going, but he was going vigorously.

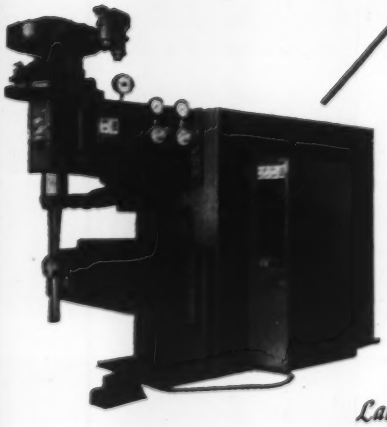
"Too bad you can't print that," one of our associates remarked.

We chuckled *a la* Shadow. It's comforting to be immune and anonymous.

Shrdlu

(Metalworking Outlook—Page 41)





Spotwelding of Scrap Sheet Titanium Forms Solid Ingots for Machined Parts

A six inch pile of 85 laminations of .064 titanium with two laminations at each end of .091 titanium is joined with one weld on a Sciaky type PMCO 6ST 400 KVA Three-Phase Spot Welder. The weld nugget forms a solid ingot of virgin metal at least as strong as the parent metal. This ingot can be machined into a variety of titanium parts. Months of lead time required for titanium is avoided and expensive scrap is utilized.

Developed by the Manufacturing Research and Development Unit of the Glenn L. Martin Company, this technique offers another fine example of Sciaky basic thinking in design of resistance welding equipment to do *more useful work* at *lowest operating cost* with *maximum reliability.*

Largest Manufacturers of Electric Resistance Welding Machines in the World

SCIAKY

4909 West 67th Street, Chicago 38, Illinois

Another Duplex Milling Machine

BY MOTCH & MERRYWEATHER

Fifty Years 1904 • 1954

STANDARDIZED TRAVELING HEAD DESIGN is adapted to *Many Specialized Jobs*

A Motch & Merryweather Duplex Milling Machine finishes the pads of an 8-foot tractor frame. A second frame (rear) is loaded while the first frame (front) is milled.

... especially for Large Parts 6 feet to 11 feet in length

Again using the facility of *traveling milling heads* instead of traveling fixtures, Motch & Merryweather creates greater universality; saves time, original cost and floor space. Standardized design enables duplex operation to dispatch a wide range of work with money-making speed and accuracy. Simplified fixturing is readily adjustable to handle parts of varying size. May we study your requirements?

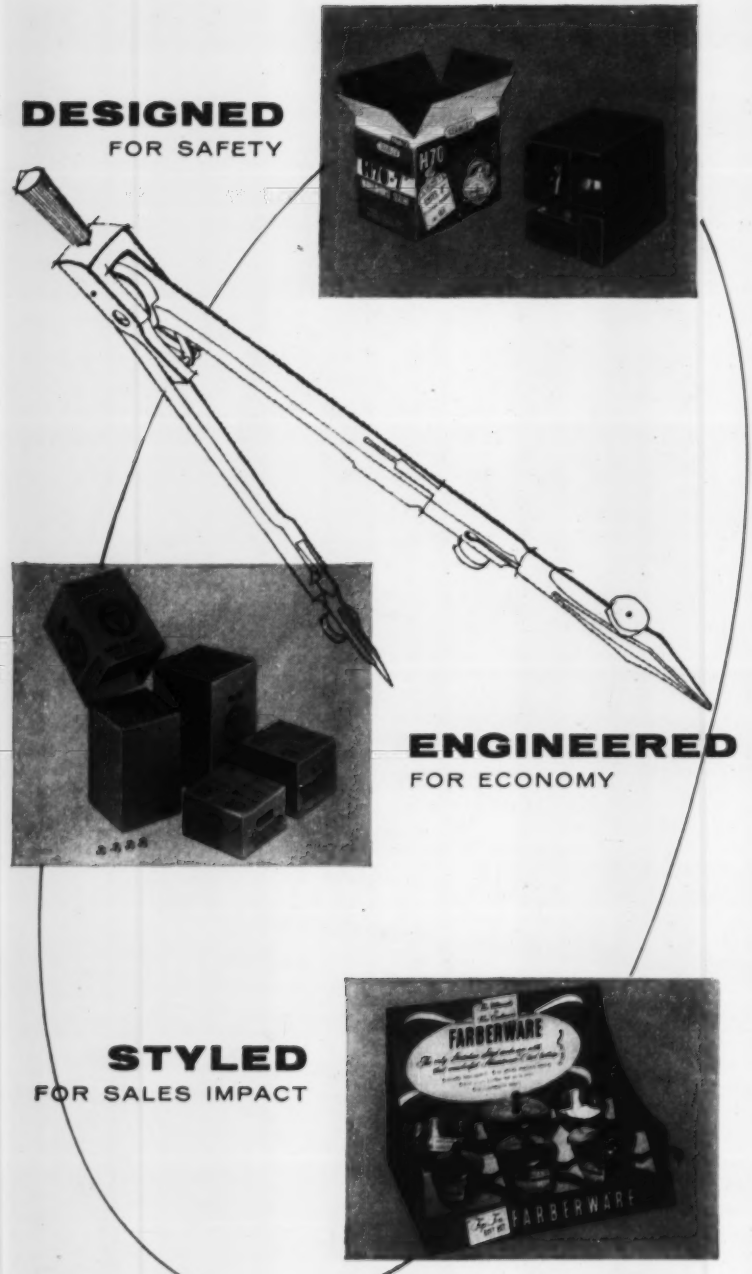
THE MOTCH & MERRYWEATHER MACHINERY CO.

MACHINERY MANUFACTURING DIVISION

CLEVELAND 13, OHIO

Builders of Circular Sawing Equipment, also Production Milling, Turning, and Special Machines

175511506
PART NUMBER
DESCRIPTION Brushholder - RH
DRAWING NUMBER
SPECIFICATIONS
SUPERSEDES
REMINGTON RAND INC.
TRAVELING REQUISITION
1 ABC Manufacturing Co.
2 XYZ Manufacturers
3
4
STOCK ON HAND
REQUISITIONED
DATE
QUAN.
DATE WANTED
APPROVED
ORDERED FROM VENDOR OR PLANT
DATE
ORDER NO.
QUAN.
VEN.
COST
PER
F. O. B.
DATE FROM USED
RECEIVED
DATE
QUAN.
DATE
QUAN.
34 2-10 25 4-30 JEC 2-11 P-11215 25 1 17.90 1 4-28 4-27 25
FOR EFFICIENT INVENTORY CONTROL
USED ON
175511506
REMINGTON RAND INC.
IN-OUT AND BALANCE RECORD
DATE
RECEIVED
DISB.
TOTAL MONTH TO DATE
BALANCE
4-2 24
4-7 1 1 23
4-11 2
DATE
RE-ORDER QUANTITY
175632A06 Brushholder - LH
175631806 Brushholder - RH
175525806 Brushholder - right
175525906 Brushholder - left
Kardex
LET'S LOOK AT THE RECORD
Business volume up 135% . . . number of items stocked up 66% . . . inventory clerks up 0%! Will Ross, Inc. of Milwaukee, Wis., not only accomplished this, but in addition, solved two other serious inventory control problems. Postings which were always far behind are now always up to date, and a personnel problem (due to labor turnover caused by fatiguing physical work) is eliminated.
The secret? Three Robot-Kardex units enable 3 clerks to do the job with ease.
A touch of the finger to an index key and in 4 seconds (average) any one of over 4,000 sets of visible records comes to the clerk, positioned for rapid, convenient, desk-height posting and reference. Robot-Kardex saves up to 30% on posting time . . . up to 59% on space.
Get the full story on Will Ross, Inc. — ask for Case History 947 . . . and free, 24-page manual, "How To Get Profits From Inventories," KD375. Write Remington Rand, Room 1846, 315 Fourth Avenue, New York 10, New York.
Remington Rand



HINDE & DAUCH

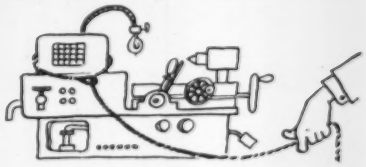
Authority on Packaging

12 FACTORIES • 40 SALES OFFICES

Write for the new booklet, Creative Package Design, Hinde & Dauch, Sandusky 47, Ohio

LETTERS
TO THE EDITORS

Leasing Proves Itself



Your article, "Equipment Marketing: New Lease on Life with Leasing?" (July 26, p. 45), is excellent. You have done a fine job of bringing your readers up to date.

Frank Griesinger
assistant treasurer
Lincoln Electric Co.
Cleveland

Who Uses Rubber Rollers?

Mr. E. F. Ross, your Chicago editor, suggested that I write to you for guidance concerning some information I am seeking.

How can I find out whether or not there is a market for rubber-covered rollers in the metalworking industry? I am interested only in the steel core, rubber-covered rollers, either natural or synthetic rubber.

What types of rubber-covered rollers are used in the metalworking industry and for what applications? Are there very many uses for such rollers in a size anywhere up to 12 feet in over-all length, 19½ inches in outside diameter and a maximum weight of 1500 pounds?

Appreciating your attention, I am thankful for any assistance you can give me.

Life is wonderful!

Lillian Stemp, journalist
630—114th St.
Whiting, Ind.

• *Do our readers have any suggestions for Miss Stemp?—ED.*

Check on 310 Stainless

Will you please send us three tear sheets of the article, "Carbides in 310 Stainless Steel," Parts I and II, by Hiram Brown, Solar Aircraft Co. (July 19 and July 26).

W. J. Schuld
metallurgist
Crucible Steel Co. of America
Pittsburgh

Please send a set of tear sheets . . .

A. R. Willner
metallurgist
David Taylor Model Basin
Navy department
Washington

Please send me a tear sheet of "Carbides in 310 Stainless Steel" . . .

H. L. Myers
chief metallurgist
Power Tube Division
Raytheon Mfg. Co.
Waltham, Mass.

Please send a set of tear sheets of both Part I and Part II of "Carbides in 310 Stainless Steel" . . .

F. G. C. Lasker
manager, Steel Division
Edstrand Brothers Inc.
New York

(Please turn to page 12)

For fast, free machining

HOW YOUNGSTOWN COLD FINISHED CARBON STEEL BECOMES HEXAGON NUTS

Four 1¼" Youngstown Cold Finished Bars feed into this automatic screw machine and are drilled, formed and cut to size. After slotting and tapping operations the Hex nuts are ready for final inspection. Youngstown Free Machining Screw Stock, specifically made for these automatic machine operations, can give you perfect Hex nuts every time.

Youngstown

QUALITY YOUNGSTOWN SERVICE

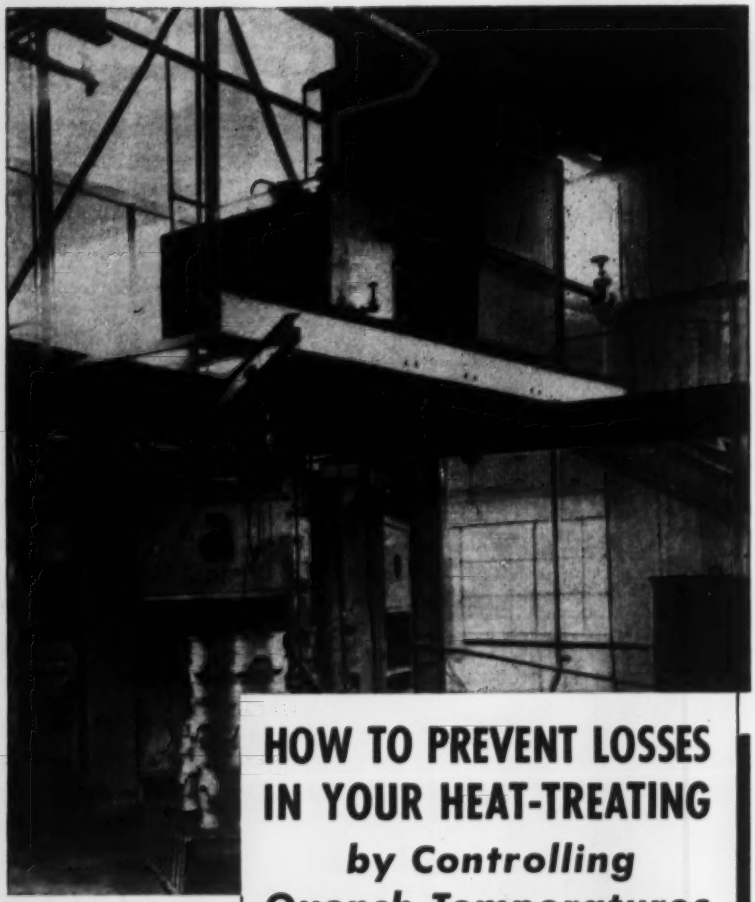
COLD FINISHED CARBON STEEL BARS

●The free machining qualities of Youngstown Cold Finished Carbon Steel Bars begin in the melting furnaces. Here the desired chemistry is established. Rigid inspections throughout processing eliminate injurious imperfections. The result of Youngstown's never-ending quality control is a uniform, top quality product, with a wide range of screw machine applications.

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES



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Write for Bulletin 120 and further information

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INDUSTRIAL COOLING HEATING • DRYING

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HUMIDIFYING • AIR ENGINEERING EQUIPMENT

LETTERS

(Concluded from page 10)

Interest in Powder Processes

I am interested in the method, process and the equipment used in the production of metal powders by milling and machining. Any sources of information on this problem would be appreciated.

D. A. Rampe
Engineering Department
Akron Brass Mfg. Co. Inc.
Wooster, O.

● *Write to the Metal Powder Association, 420 Lexington Ave., New York 17.—ED.*

Random Comments on Series

If possible, I should like to get copies of STEEL's 1953 Program for Management as well as the articles in the 1954 series as they appear. The high interest these articles have evoked is well deserved. In my opinion they are excellent, and they certainly fill a need.

J. N. Romney
assistant to the sales manager
Dresser Mfg. Division
Dresser Industries Inc.
Bradford, Pa.

I have found these articles to be quite informative and at the same time a real stimulus to our own attempts to solve the problems we have here.

R. J. Berkowitz, sales manager
Marion Machine Foundry & Supply Co.
Marion, Ind.

We consider STEEL's 1954 Program for Management excellent and wish to have them in our permanent reference file.

R. V. Klikunas
director of engineering
Rensselaer Valve Co.
Troy, N. Y.

I have been very much interested in STEEL's 1954 Program for Management articles which cover the general subject of distribution. They are timely, instructive and well written.

J. B. Johnson
director of instruction
management courses
LaSalle Extension University
Chicago

Deluge for Guide Continues

May we have two copies of the "Guide for Steel Buyers" (July 12, Section 2).

W. Kauders
Hydropress Inc.
New York

Please send ten . . .

J. D. Breedlove
Sheffield Steel Division
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Kansas City, Mo.

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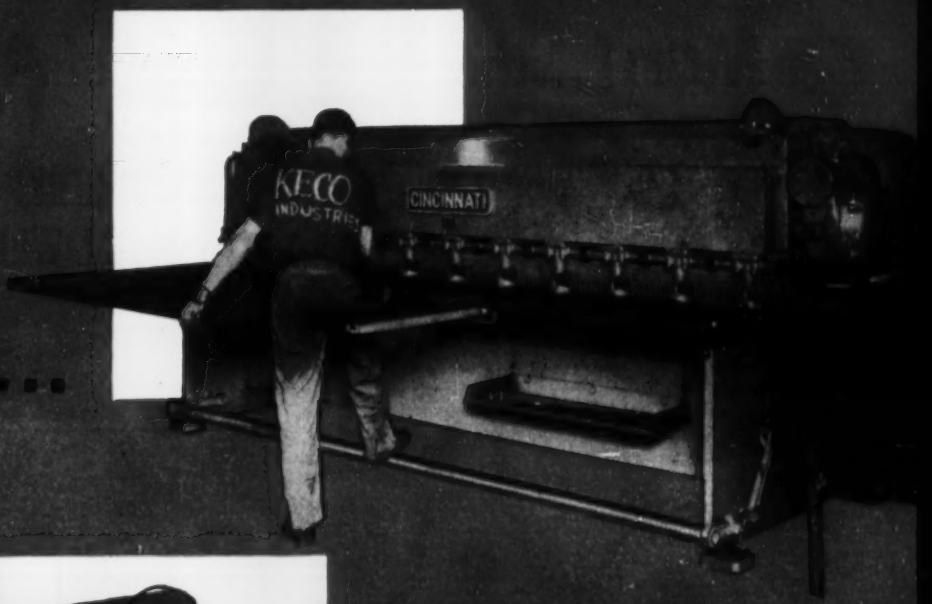

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with this CINCINNATI team

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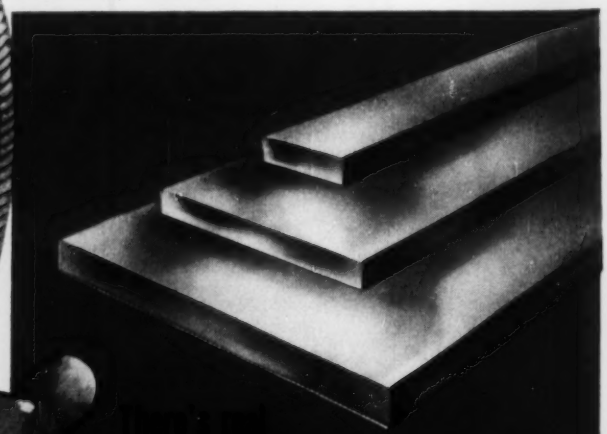

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1 AIRCRAFT TUBING—Smooth, extra sharp bends now produced in ultra-thin stainless steel tubing, saves space and $14,000 per plane for aircraft manufacturer. Shown above, Pines Size 4 Unit forming wrinkle-free 8" c/l radius bend in 4" x .020" S. S. tubing.

2 HOLLOW TRACTOR BOOMS—Cold bending 12 ga. welded steel tapered tubes without distortion on Size 4 Pines unit eliminates expensive blanking and forming dies, saves tons of material for farm equipment manufacturer.

3 EXTRUDED WINDOW FRAMES — Part of production line setup in large aluminum fabricating plant, this small Pines Semi-Automatic saves space, accurately bends automobile window frame moldings.

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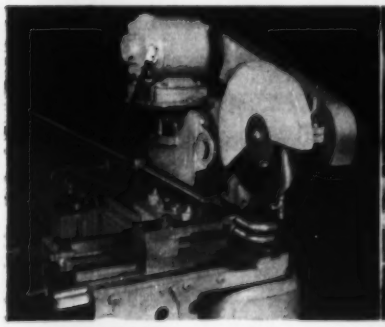
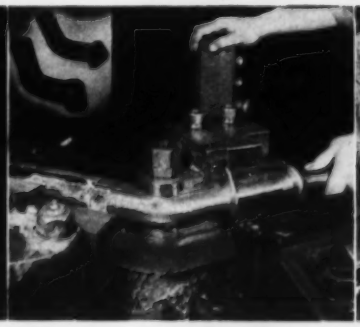
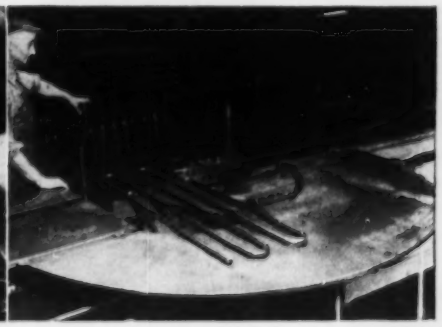
5 ENGINE MANIFOLD TUBES—Short 1½" O. D. steel tube now bent to 1½" c/l radius with flange attached saves space, insures accuracy, cuts costs.

6 BOILER TUBE AND REFRIGERATION COILS — Typical setup bending continuous serpentine coils from ⅜" steel tubing. Reduces welding, fabricating costs. Other installations range from ¼" copper up to 3" steel tube.







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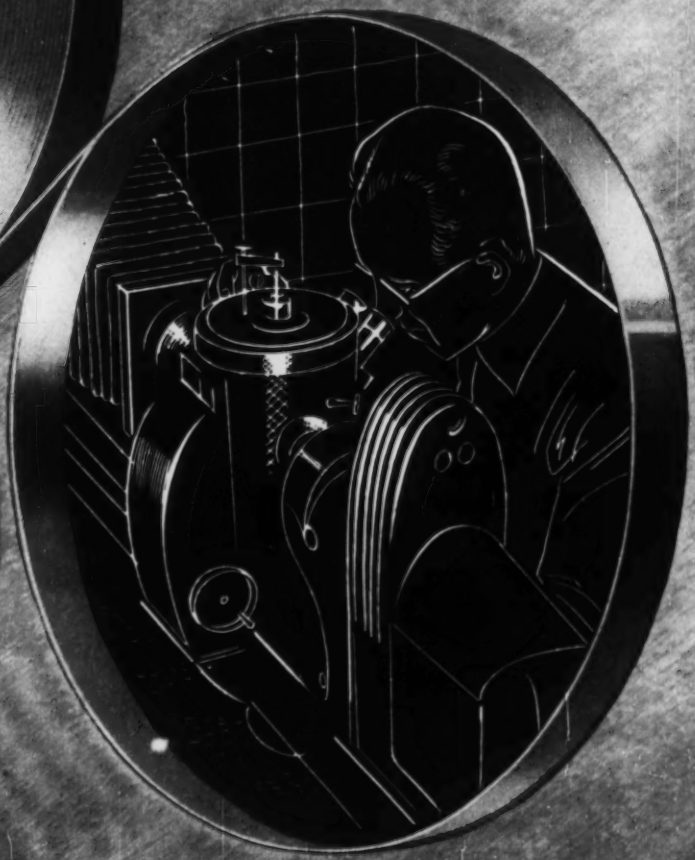

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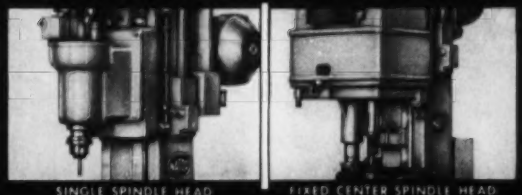

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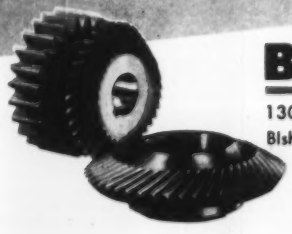

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CALENDAR
OF MEETINGS

August 25-27, Western Electronic Show & Convention: Pan Pacific Auditorium and Ambassador hotel, Los Angeles. Business manager: Mal Mobley Jr., 344 N. La Brea Ave., Los Angeles 36.

August 30-September 3, Automotive Electric Association: Annual fall meeting, Vanss Springs hotel, Vanss Springs, Alberta, Canada. Association address: 802 Michigan Bldg., Detroit. Executive secretary: S. W. Potter.

September 1-16, International Electrotechnical Commission: Golden jubilee meeting, University of Pennsylvania, Philadelphia. Information: D. E. Denton, Public Relations Dept., American Standards Association, 70 E. 45th St., New York 17.

September 4-8, Pressed Metal Institute: Annual fall meeting, Manoir Richelieu hotel, Murray Bay, P.Q., Canada. Institute address: 2860 E. 130th St., Cleveland. Managing director: O. B. Werntz.

September 7-9, Industrial Truck Association: Fall meeting, Greenbrier hotel, White Sulphur Springs, W. Va. Association address: Washington Loan & Trust Bldg., Washington 4. Secretary: William Van C. Brandt.

September 7-9, National Fluid Power Association: Fall meeting, Hotel Commodore, New York. Association address: 1618 Orrington Ave., Evanston, Ill. Secretary: Barrett Rogers.

September 8-10, American Society of Mechanical Engineers: Fall meeting, Schroeder hotel, Milwaukee, Wis. Society address: 29 W. 39th St., New York. Secretary: C. E. Davies.

September 8-10, Porcelain Enamel Institute Inc.: Shop practice forum meeting, Urbana-Lincoln hotel, Urbana, Ill. Institute address: 1346 Connecticut Ave. N.W., Washington 6. Secretary: John C. Oliver.

September 8-10, National Bureau of Standards: Conference on cryogenic engineering, NBS-AEC cryogenic engineering laboratory, Boulder, Colo. Information: M. M. Reynolds, chairman of the conference, NBS Boulder Laboratories, Boulder, Colo.

September 10-11, Metal Powder Association: Fall closed meeting, The Homestead, Hot Springs, Va. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

September 11-14, Packaging Machinery Manufacturers Institute: Annual meeting, Grove Park Inn, Asheville, N. C. Institute address: 342 Madison Ave., New York 17. Secretary: Miss Helen L. Stratton.

September 12-15, National Metal Trades Association: Eastern plant management conference, Sagamore hotel, Lake George, N. Y. Association address: 122 S. Michigan Ave., Chicago 3. Secretary: Charles L. Blatchford.

September 12-17, American Chemical Society: Fall meeting, Statler hotel, New York. Society address: 1155—16th St. N. W., Washington 6. Executive secretary: Alden H. Emery.

September 13-14, American Coke & Coal Chemicals Institute: Annual meeting, The Homestead, Hotel Springs, Va. Institute address: 711 14th St. N.W., Washington 5. President: Samuel Weiss.

September 13-15, Allied Railway Supply Association: Annual meeting and exhibit, Hotel Sherman, Chicago. Association address: 1200 W. Chase Ave., Chicago 26. Secretary: C. F. Well.

September 13-16, Society of Automotive Engineers Inc.: National tractor meeting and production forum, Hotel Schroeder, Milwaukee. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

September 13-24, Instrument Society of America: First international instrument congress and exposition: Commercial Museum and Auditorium, Philadelphia. Information: First International Instrument Congress and Exposition, 921 Ridge Ave., Pittsburgh 12. Managing Director: Richard Rimbach.

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Look for the red center and **UNISORB** brand mark

The **FELTERS** Co.

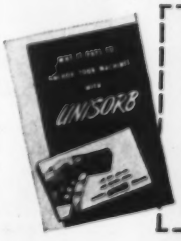
231 SOUTH STREET, BOSTON 11, MASS.

"FELT FOR EVERY USE"

Offices: New York, Philadelphia, Chicago, Detroit, St. Louis

Sales Representatives: San Francisco

Mills: Johnson City, New York; Millbury, Mass.; Jackson, Mich.; New York City



RETURN COUPON NOW! Please send me a copy of FACTS ABOUT ANCHORING YOUR MACHINES ON UNISORB, at no obligation to me.

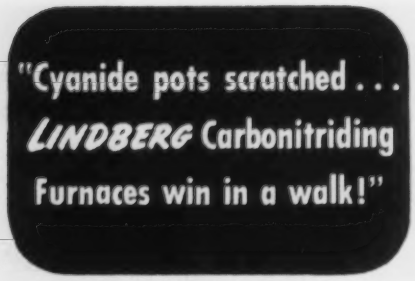
Name..... Title.....
(Please Print)

Company.....

Address.....

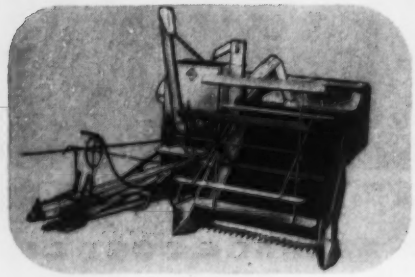
City..... Zone..... State.....

Return to The Felters Co., 231 South St., Boston 11, Mass.

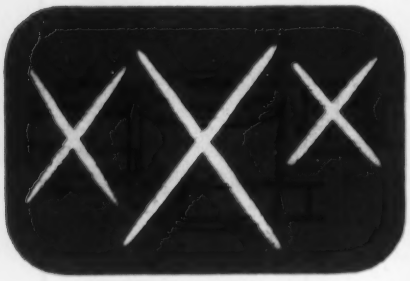


1. Owner, Allis-Chalmers, internationally known maker of farm machinery.

2. Allis-Chalmers purchased 3 Lindberg Carbonitriding Furnaces for its La Porte Works.

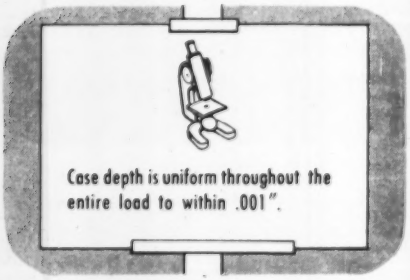


3. Furnaces used to heat-treat farm machinery parts—from a few ounces to 5 pounds.



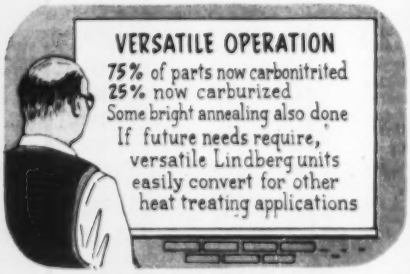
4. Old salt pots did not provide needed volume or desired uniformity of case depth.

5. This factor represents a tangible, specific saving in operating and labor costs.

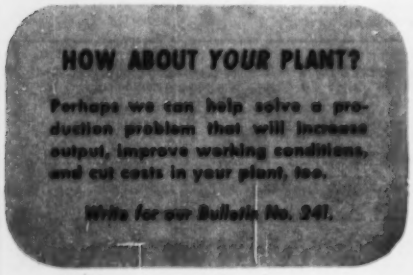


6. In addition to this advantage, working conditions were substantially improved.

7. Shot blasting eliminated... case depth requirements of .005 to .030 met.

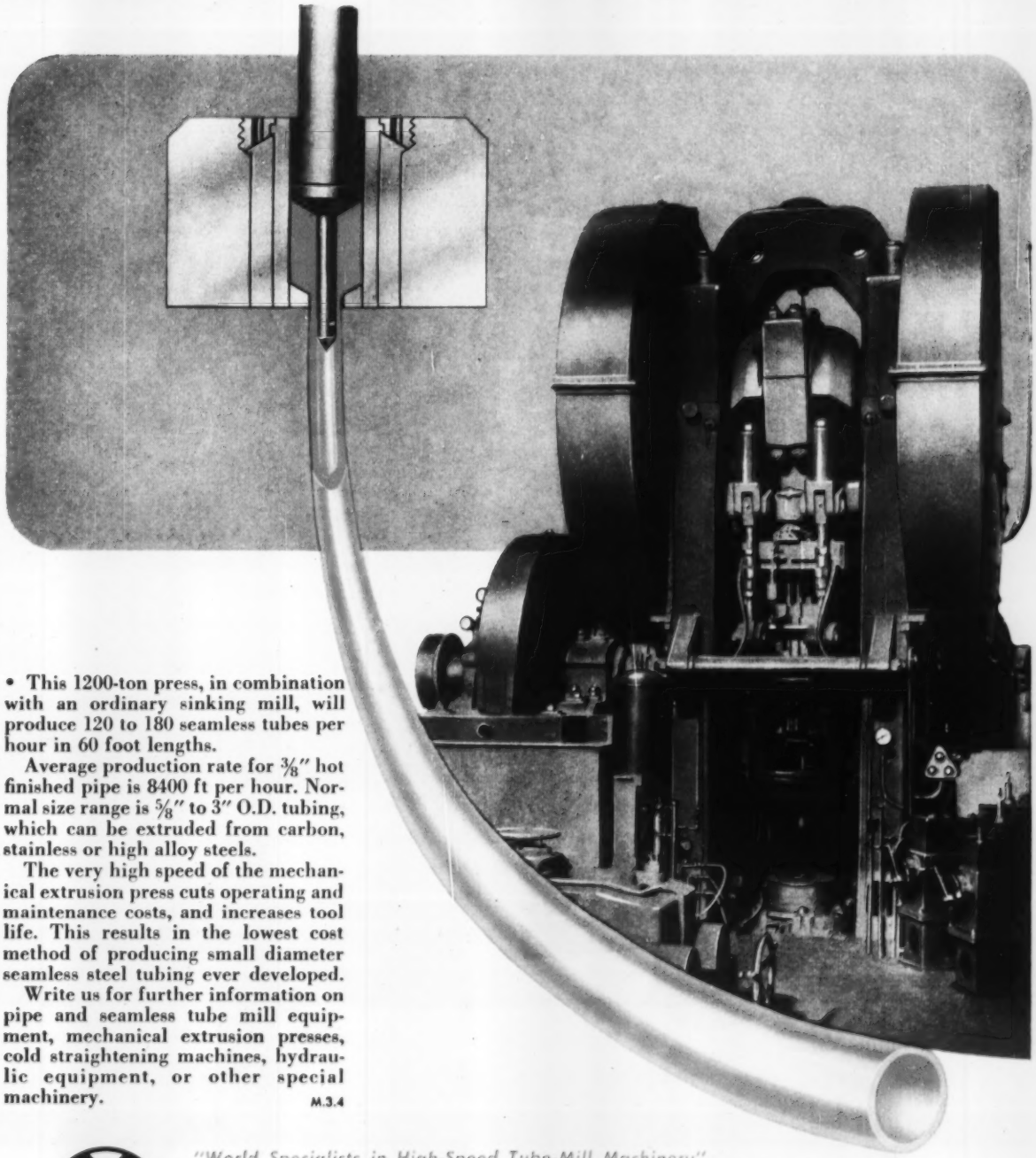

VERSATILE OPERATION
75% of parts now carbonitrited
25% now carburized
Some bright annealing also done
If future needs require, versatile Lindberg units easily convert for other heat treating applications

8. Neutral hardening, carbon correction, tool treating—done with simple switch-over.


HOW ABOUT YOUR PLANT?
Perhaps we can help solve a production problem that will increase output, improve working conditions, and cut costs in your plant, too.
Write for our Bulletin No. 241.

MECHANICAL EXTRUSION PRESS

produces up to 180 seamless tubes per hour



• This 1200-ton press, in combination with an ordinary sinking mill, will produce 120 to 180 seamless tubes per hour in 60 foot lengths.

Average production rate for 3/8" hot finished pipe is 8400 ft per hour. Normal size range is 5/8" to 3" O.D. tubing, which can be extruded from carbon, stainless or high alloy steels.

The very high speed of the mechanical extrusion press cuts operating and maintenance costs, and increases tool life. This results in the lowest cost method of producing small diameter seamless steel tubing ever developed.

Write us for further information on pipe and seamless tube mill equipment, mechanical extrusion presses, cold straightening machines, hydraulic equipment, or other special machinery.

M.3.4

"World Specialists in High-Speed Tube-Mill Machinery"

MANNESMANN-MEER ENGINEERING & CONSTRUCTION COMPANY

900 Line Street, Easton, Penna.

For Roll Corrugating and Culvert forming . . . see

Stamco

Stamco #6A high speed corrugator

Stamco 8 ga. Culvert Curving roll

Stamco 8 ga. x 36" corrugated shear

Stamco high duty Culvert Punch and Riveter equipped with air operated friction clutch

Stamco standard Culvert Punch and Riveter

STAMCO, Inc., New Bremen, Ohio

What size is a quality fastener?

Here are two ELASTIC STOP® nuts.
Each has the familiar red locking collar. Each is self-locking, vibration-proof and can be reused many times. Each is a fast, readily assembled one-piece unit . . . will maintain accurate adjustment anywhere on a bolt. Each will afford positive protection against thread corrosion . . . prevent liquid seepage along bolts. Each is manufactured in quantity. Each is exactly controlled as to quality of raw material, finished dimensions, class of thread fit, seat squareness and finish. Each has a record for precision and uniformly high performance that is unmatched.

But . . . one measures 1/10 inch across the flats; the other, 4 inches. Between these two, there are more than 530 different hex nuts in the ESNA line. They are the result of variations in height, material, finish and size.

Look to ESNA for the top quality self-locking fastener that fits your need best.

ELASTIC STOP NUT CORPORATION OF AMERICA

ESNA® TRADE MARK

ROLLPIN TRADEMARK

Elastic Stop Nut Corporation of America
Dept. N58-860, 2330 Vauxhall Road, Union, N. J.
Please send the following free fastening information:

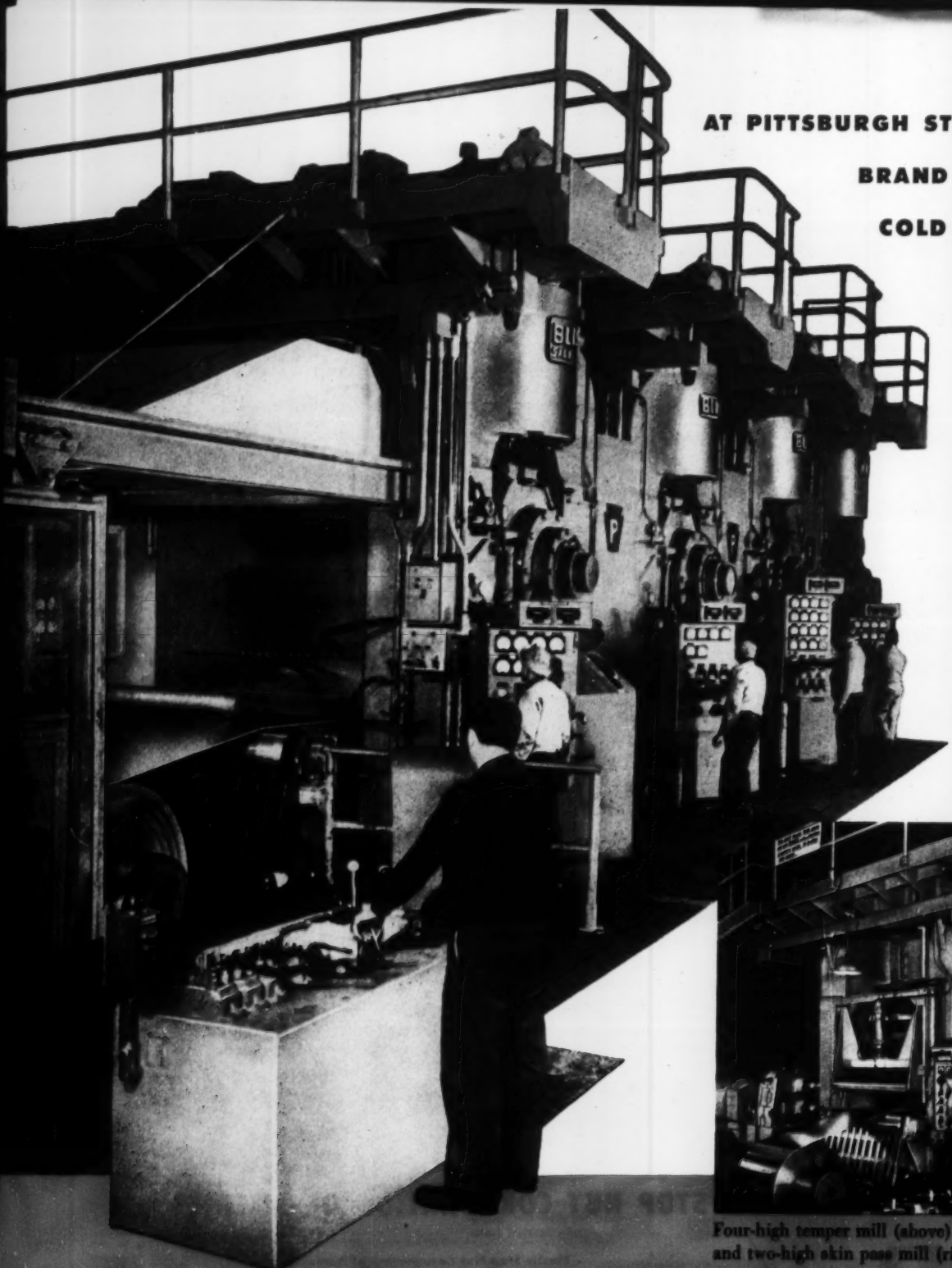
☐ ELASTIC STOP nut bulletin ☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name_____ Title_____

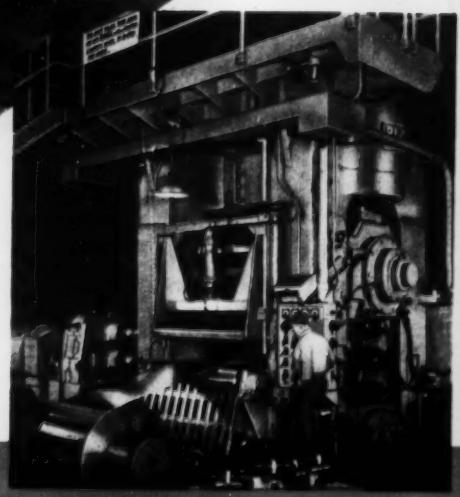
Firm_____

Street_____

City_____ Zone_____ State_____



AT PITTSBURGH STEEL'S BRAND NEW COLD MILL



Four-high temper mill (above) and two-high skin pass mill (right).

COLD REDUCING STEEL AT 40 MILES AN HOUR!

Steel strip whips through this Bliss four-stand tandem mill at highway speeds. But more than that, this Bliss mill is especially designed for versatility in production. It will handle a wide range of sizes and gages. Its extra-heavy housings permit the mill to be used for rolling tin-plate, also. And the automatic coil loading and unloading machinery, the modern instruments throughout make this fast, versatile mill one of the safest in the industry for the workmen.

Versatile BLISS Mills meet

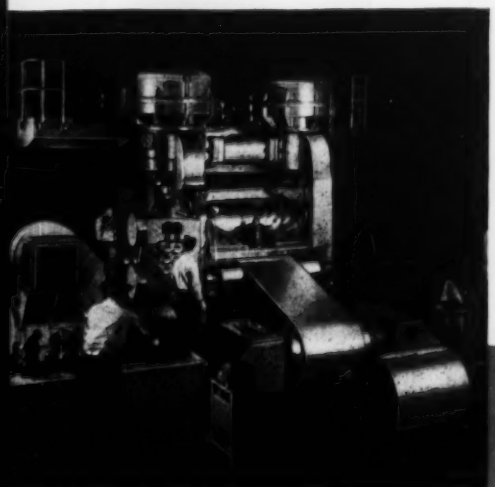
a variety of cold strip requirements

The giant four-stand 66-in. tandem mill at Pittsburgh Steel's Allenport plant is the "key" to the plant's versatility: it handles widths from 20 to 60 in.; thicknesses from tinplate to 16 gage. What's more, extra heavy housings equip the mill for tougher rolling schedules. The latest in instrumentation is used to control tension, shape and surface finish. Automatic coil handling equipment and safety devices throughout make this mill one of the safest yet designed for industry.

Two similarly-equipped Bliss finishing mills in use at Pittsburgh Steel are equally versatile. A Bliss four-high mill is used for temper passing cold rolled strip; a Bliss two-high mill serves to skin pass hot rolled bands. Both are "combination mills"—designed and built to allow processing of either continuous coils or cut-to-length sheets.

At Pittsburgh Steel, versatility was the "watchword". In other cases, it's specialization. Or speed. But whatever your rolling mill problem, you can count on a "tailor-made" solution from Bliss. You can see for yourself how this approach has helped others—write today for catalog 40-A, our 60-page rolling mill brochure.

Remember: BLISS for Presses, ROLLING MILLS and Special Machinery



E. W. BLISS Company

General Offices: Canton, Ohio

ROLLING MILL DIVISION, SALEM, OHIO

BLISS

SINCE 1857

ON THE "FINISHING LINE"

In temper passing strip steel, Pittsburgh achieves for its customers the smooth, highly-planished finish and the exact temper required for their end product. Skin passing of the hot rolled strip is done on the Bliss two-high and temper passing of the cold rolled strip, on the Bliss four-high. Each is equipped with the latest instrumentation for gaging the strip, measuring the tension applied and measuring the elongation obtained in each pass. Safety devices are provided throughout for the welfare and protection of the operating personnel.

when work orders say,

Push this!

and the boss says,

Save Money!

choose
GARDNER-DENVER
maintenance tools

Paving Breakers

Backfill Tampers

Sheeting Drivers

Rock Drills

Utility Drills

Trench Diggers

Air Hoists

Clay Spaders

Line Oilers

Portable Compressors

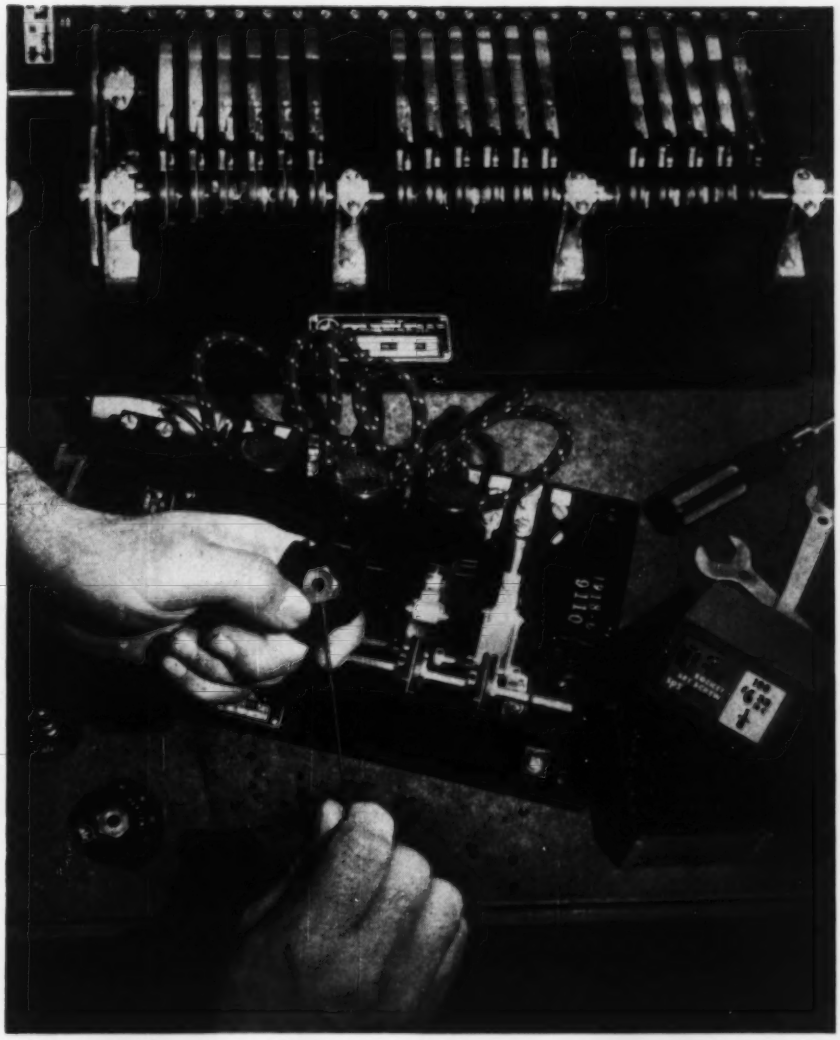
Sump Pumps

choose
GARDNER-DENVER
air motors

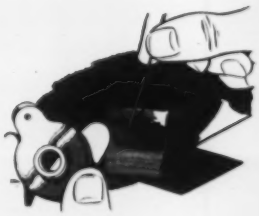
for smooth, safe, flexible power. Bulletin AM-1.

Send for our new Bulletins on Paving Breakers and Air Tools.

GARDNER-DENVER



Two UNBRAKO Self-Locking Socket Set Screws are used on each cam of these precision multicircuit cam timers. The screws position the cams so as to control accurately the sequence and duration of one or a series of individually timed machine or process operations.



Assembler picks up tiny UNBRAKO set screw with long arm key preparatory to threading it into cam assembly.

He inserts the UNBRAKO, and turns it into the assembly; then after positioning cam, tightens it. The accurate depth and size of the hex socket result in maximum torquing—the knurled cup point holds the cam accurately in place.

UNBRAKOs—made of heat treated alloy steel—have fully formed threads, Class 3 fit; are supplied in standard sizes from # 4 to 1".

You'll need less space for storage when you use UNBRAKO Standards—stocked by your distributor

You'll need less space for storage and be able to carry a smaller inventory, because standard UNBRAKO socket screw products are in stock at your local industrial distributor's. And you'll save time and money, because deliveries are prompt. For more information, write for UNBRAKO Standards—a complete listing of socket screw products made by the world's largest manufacturer of these precision fasteners. STANDARD PRESSED STEEL Co., Jenkintown 33, Pa.

UNBRAKO® SOCKET SCREW DIVISION

SPS JENKINTOWN PENNSYLVANIA

"So popular with our shop men it's overworked to the neglect of our several other punch and shear machines. In fact, so much that I have ordered another."

Writes *L. A. Delisle* Shop Superintendent Bushnell Steel Works, Inc., Tampa, Florida

—about his "BUFFALO" UNIVERSAL IRON WORKER

ONE MACHINE DOES UP TO 5 FABRICATION JOBS

What Mr. Delisle's men like about the U.I.W. is that you can do a whole shop-full of fabrication jobs on a work piece without travelling from machine to machine. You can do a wide variety of punching—such as the Bushnell man above is doing on the I-beam web and flange—while another man can be mitering angles or tees 90° or 45°, cutting round or square bars, cutting flats, slitting or notching at the same time. Small wonder so many users of "Buffalo" Universal Iron Workers call them the "most useful machines in the shop". Why not write for Bulletin 360-E and look into these durable, multi-purpose machines that will save space, dollars and hours in your shop?

"Buffalo"

BUFFALO FORGE COMPANY

158 Mortimer St. Buffalo, New York

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING BENDING

Built for SEVERE DUTY

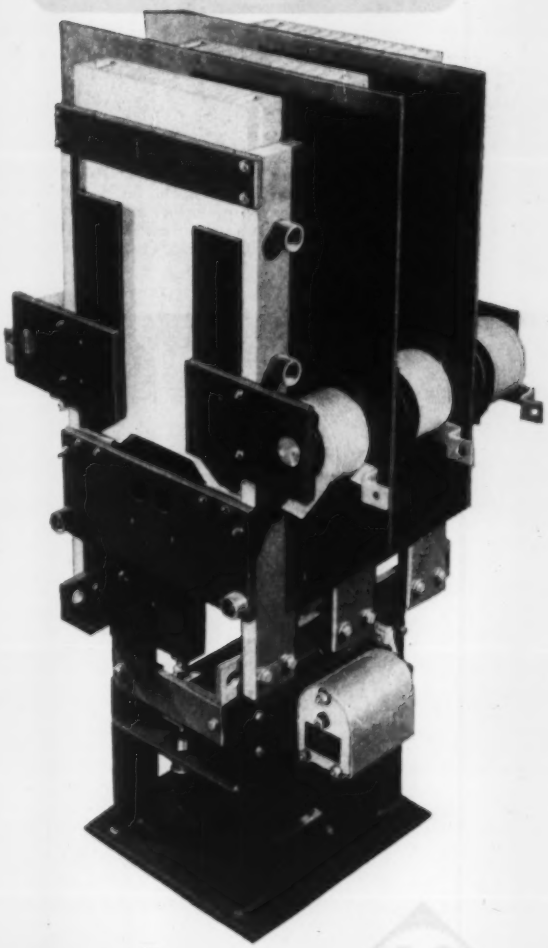
frequent starting • inching • reversing • dynamic braking

ALLIS-CHALMERS

Type 256

AIR CONTACTOR

FOR 2300 TO 5000-VOLT MOTOR CONTROL



Durability and long-term dependability were given prime consideration in the design of the Allis-Chalmers Type 256 air-break contactor. As a result, the roughest repetitive duty becomes routine — contact operations are actually numbered in the millions with a minimum of servicing.

DESIGN FEATURES

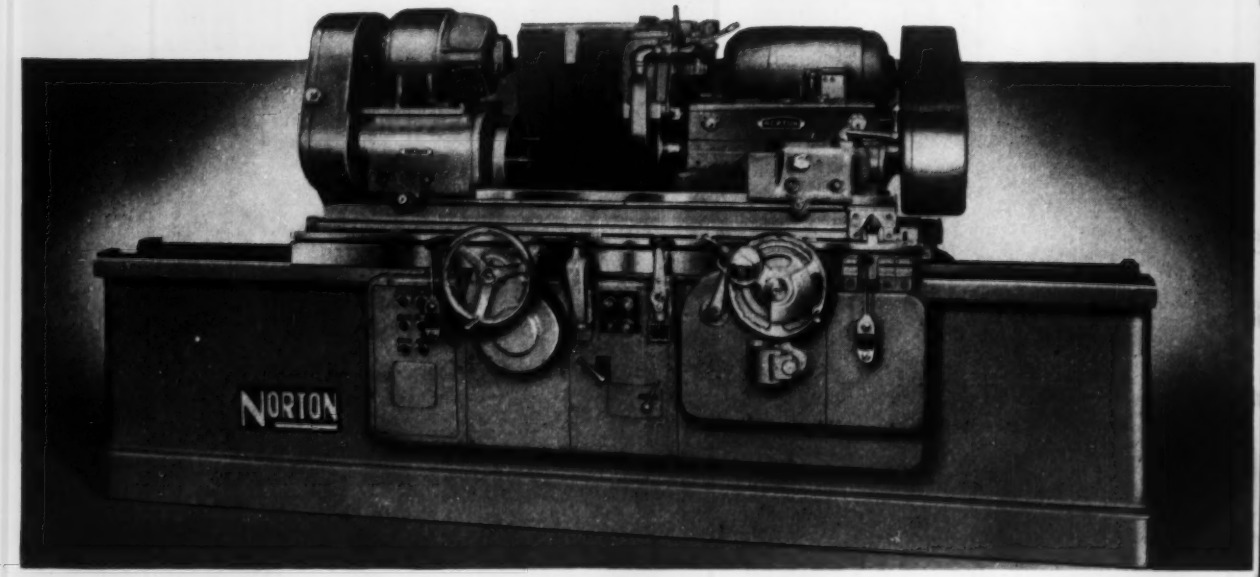
By utilizing a simple vertical motion and double break contacts, troublesome maintenance factors, such as mechanical linkages, turning shafts, shaft bearings and flexible leads, have been eliminated. From the operation standpoint, two gaps in series cut arc voltage in half. Rapid arc extinction is further facilitated by magnetic blowouts at each gap, operating with arc chutes designed to take full advantage of dual blowouts.

In Allis-Chalmers Type H high voltage starters, Type 256 air-break contactors — along with meters, overload relays, current limiting fuses, auxiliary switches — are coordinated to meet heavy duty demands — to provide high capacity interruption and complete protection for man, motor and machine. For complete information see your nearby A-C representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for bulletins 14B6410B and 14B7303.

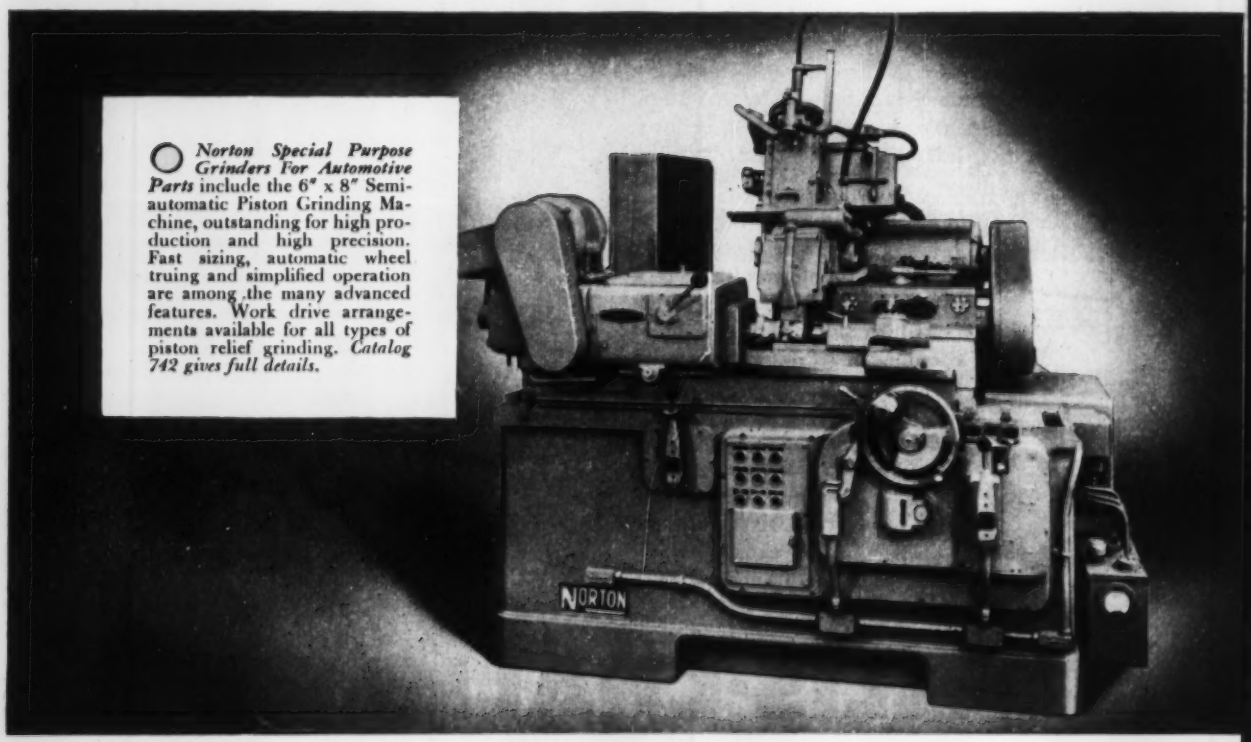
A-4325

ALLIS-CHALMERS

6 from the world's most



○ ***Norton General Purpose Production Type Cylindrical Grinders.*** The 10″ x 36″ Type CTU Semi-automatic, a top performer among grinding machines of this type, offers a unique combination of speed, accuracy, flexibility and sturdiness. One-lever control of the automatic grinding cycle reduces operator's duties to loading and unloading. Production line and job shop users report Norton 10″ CTU's have doubled production, replaced several machines, eliminated extra operations. *Write for Catalog 1787.*

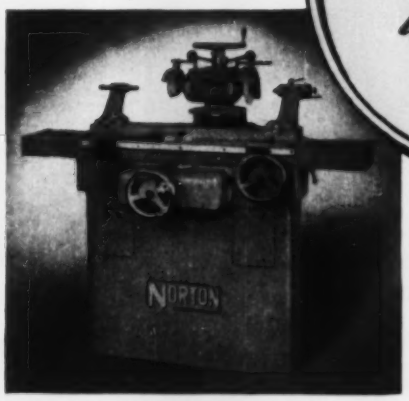


○ ***Norton Special Purpose Grinders For Automotive Parts*** include the 6″ x 8″ Semi-automatic Piston Grinding Machine, outstanding for high production and high precision. Fast sizing, automatic wheel truing and simplified operation are among the many advanced features. Work drive arrangements available for all types of piston relief grinding. *Catalog 742 gives full details.*

complete line of

money-saving grinders and lappers

Norton Surface Grinders are well represented by this 8" x 24" Hydraulic Grinder. Designed with both hand and power table traverse and cross feed, it produces plane surfaces smoothly and speedily. Convenient controls and easy accessibility keep operating and maintenance times low. Extra equipment, such as magnetic chucks, wet grinding attachment and individual dust exhaust system meet all operating conditions. *Write for Catalog 190.*



Norton Tool Room Cutter Grinders. The No. 20 Cutter and Tool Grinder is the most versatile machine in its class. The wheel head tilts up to 15° above or below horizontal, and may be swivelled through 360° — simplifying such jobs as grinding taper reamers, step counterbores, form tools and milling cutters. Other pace-setting advantages include long table traverse and wheel slide travel . . . integral motor spindle . . . wheel slide graduated dials readable from any angle. No other cutter and tool grinder does so many jobs so fast, so easily. *Catalog 189 tells you why.*

Norton Lapping Machines. The Type 16FC Vertical Lapper brings you outstanding production capacity for such work as diesel injector parts, plug gages, size blocks, sides of small bearing races, pump gears and plates and many other parts. Laps flat work up to 3" x 5", and cylindrical work up to 3" diameter, producing a high degree of accuracy and finish. *Catalog 212 gives you details.*

Only Norton offers you such long experience in both grinding machines and wheels to help you produce more at lower cost.

The six machines shown here are typical products of that experience — bringing you ahead-of-the-parade design that speeds production and adds maximum product-value on every job they do for you.

But remember — these six advanced machines represent only a small fraction of the world's broadest line. Besides many models of cylindrical, surface, crankshaft and camshaft grinding machines, Norton produces a wide range of lapping machines, tool room grinders and special types for grinding pistons, valves, jet parts, etc.

A new illustrated folder #1843 lists the entire Norton line of grinding and lapping machines and tells you how to get all the facts on each unit. For your copy, write to NORTON COMPANY, Machine Division, Worcester 6, Mass. *In Canada:* J. H. Ryder Machinery Co., Ltd., Toronto 5.

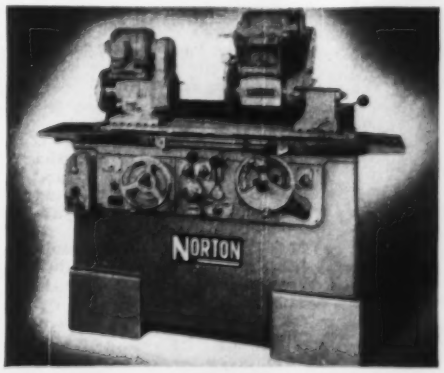
To Economize, Modernize With NEW

NORTON

GRINDERS and LAPPERS

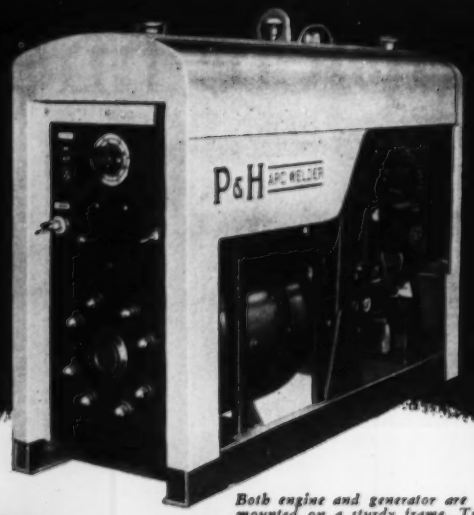
Making better products . . . to make other products better

District Sales Offices: Worcester • Hartford • New York
Cleveland • Chicago • Detroit



Norton 10" Universal Grinders. The 10" x 20" Universal Grinder has the flexibility to handle an almost endless variety of jobs. Compound swivel arrangement of wheel head enables you to make separate angular settings of wheel and feed. External, internal, face or angular wheel slide operations are easy. Chuck may be mounted on one end of work head spindle, ready for use by turning head 180°. *Write for Catalog 170.*

NEMA-rated at 200 amps.
—but pulls 300 amps.!
Runs all day on one tank of gas!



Both engine and generator are mounted on a sturdy frame. Two-wheel mounting also available.

New P&H WN-250 Engine-Driven Arc Welder

Here you get everything you've ever wanted in an engine-driven welder — including cost-cutting features you don't get from any other:

(1) The P&H WN-250 has more capacity than other welders with the same rating.

(2) It has a full 20-gallon gas tank.

(3) It is powered by a direct-connected 180GLU Waukesha gasoline engine, water-cooled and built for heavy duty. Not an automotive light-weight. Available with electric starter.

(4) P&H idling device establishes the rated speed of 1800 rpm as soon as the arc is struck. This speed is maintained for a set period after the arc is broken.

(5) P&H Dial-lectric Control provides stepless heat adjustment over the entire high or low range.

(6) It has pre-lubricated bearings, to reduce the need for servicing and insure longer life.

(7) Auxiliary AC power supply (1KVA) permits floodlighting and running power tools.

You're money ahead with a P&H WN-250. Ask your P&H representative or distributor for all the facts. Or, write for bulletin.

P&H WELDING DIVISION
HARNISCHFEGER CORPORATION
4411 West National Avenue
MILWAUKEE 46, WISCONSIN

Continuous 8-hour welding test demonstrates the extra stamina of the P & H WN-250

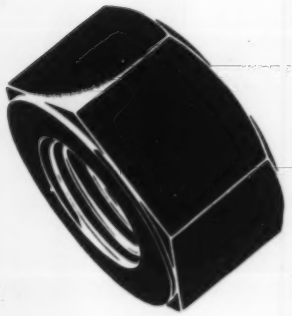
You can't beat welding performance like this: In a recent test, the P&H WN-250 operated continuously for 8 hours on a 70% duty cycle.

A 5/32" electrode was used with 300 feet of cable. There were 250 amps. at the electrode. So that test would be continuous, three welding operators were used. When one got tired, another took over. All used the drag technique with a 6010 rod—which is as close to a short circuit as you can get.

At the end of 8 hours, the P&H generator was still cool. And the WN-250 was still rarin' to go—the weldors were worn out, but not the machine.

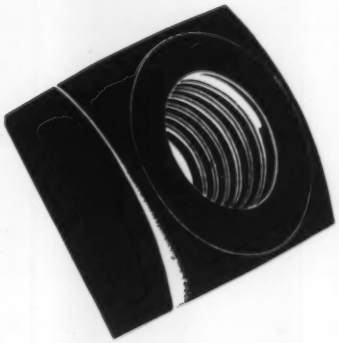
the P&H *line*

25958



REPUBLIC

SEMI-FINISHED AND COLD PUNCHED NUTS ARE TOP QUALITY FROM ANY ANGLE

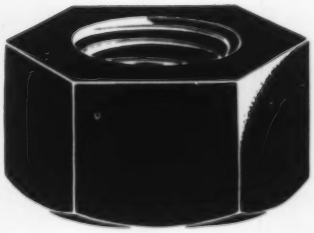


First chance you get examine any Republic nut carefully.

Notice the sharp, accurate threads, the full threading area. This assures fast assembly—a firm, more uniform grip when nut is tightened.

Notice, too, the clean, smooth faces, the sharply defined corners. Wrenches fit squarely and snugly with less chance for slippage. This reduces deformation—saves time and tempers.

If you're looking for quality fasteners, remember that Republic Bolts and Nuts come in over 20,000 different types, sizes and shapes. For more information write to:



REPUBLIC STEEL CORPORATION
Bolt and Nut Division • Cleveland 13, Ohio
Plants at Cleveland, Ohio and Gadsden, Alabama
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

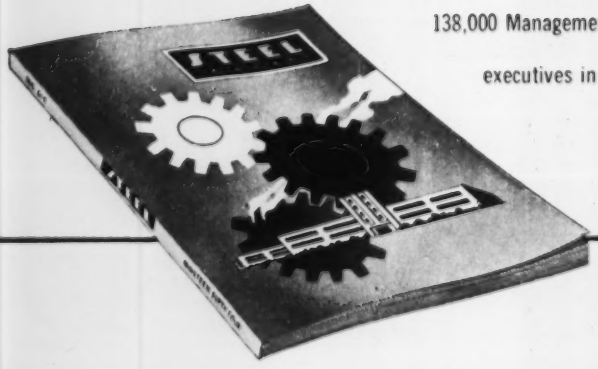
REPUBLIC BOLTS AND NUTS

REPUBLIC STEEL

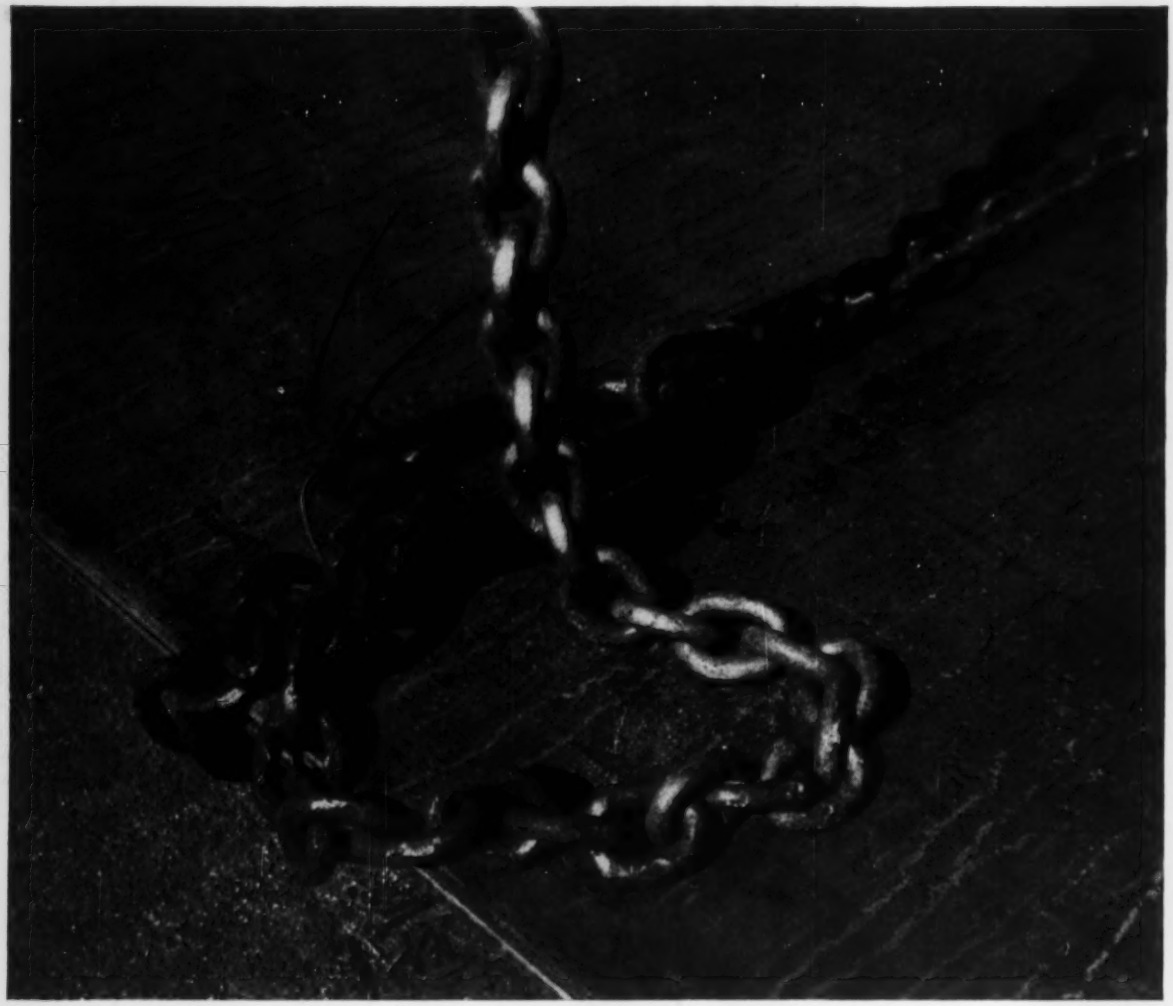
If you have a product that needs a push

Put the strength of STEEL

into your advertising program



138,000 Management, Production, Engineering and Purchasing executives in metalworking read it . . . use it . . . depend upon it!



Practically no

chain reaction

despite 10-years' pickling service

We've made this picture just as big as possible . . .

So that you could examine for yourself the reaction of this Monel® chain to its 10 years in and out of the hot sulfuric with heavy steel plate and fabrications.

As you can see there are some nicks and a little wear . . . but there's certainly no sign of corrosion. And it's obvious that this chain still has many years of life ahead.

There's another chain just like it in the same service. Both are made of ¾ inch hot rolled Monel, gas welded at the link joints.

It's a very practical construction. Wrought Monel has the strength of steel and even greater toughness. It resists corrosion by sulfuric, hydrochloric, and hydrofluoric acid solutions at pickling strengths and temperatures. That makes for thin sections, light weight, savings. Furthermore Monel is readily welded and fabricated. That saves money, too, and makes repair easy. (But as you see, repairs are few and far between.)

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STEEL

August 23, 1954

Metalworking Outlook

Atom Law Stirs Industry

The new atomic energy bill will spur power development, boost uranium prospecting, encourage private research and foster more manufacturing of equipment used in atomic fields. The compromise measure gives private enterprise a bigger role in atomic energy development than it now has, but it won't be as big as many industrialists had hoped. It provides that companies which enter the atomic field can obtain patents on atomic devices they develop. But for the first five years, those patents must be shared for a fee with qualified applicants. After that, regular and exclusive patent rights will be granted for the customary 17 years, renewable for the same period.

More Foreign Aid?

Look for more than $3 billion to be spent annually on foreign aid by the U. S. in the next 12 months, even though House-Senate conferees last week approved less than $3 billion for fiscal 1955. The President's advisers are considering an ambitious program to fight Communism in Asia and other areas. The plan would have to be O.K.'d by Congress in the next session beginning January, 1955. That won't be easy, but the Administration is marshaling arguments already.

The Nudge Is Delivered

A government nudge to the economy will be forthcoming now that House-Senate conferees have approved these supplemental appropriations: $796 million for Air Force public works, $380 million for stockpiling strategic materials, $98 million for Navy public works, $30 million for tankers, $82.7 million for ship construction, $22 million for Air Force construction and $21 million for federal aid to states for construction of hospital facilities. In addition, $8.4 million has been O.K.'d for a Census of Manufactures in 1955 on 1954 business.

Renegotiation: Relief Ahead

Renegotiation of defense business will be less onerous. The House was expected last week to accept Senate-passed amendments to the renegotiation law. The amendments would make $500,000 per year the minimum amount subject to renegotiation, rather than $250,000 at present, liberalize renegotiation in machine tools and other durable goods and exempt standard commercial articles. In 11,850 cases examined by the present Renegotiation Board since it was formed in 1951, $107.9 million has been recovered.

Wanted: Titanium Rolling Facilities

You can expect some of the titanium producers to build rolling facilities soon especially designed for mill products. Equipment originally intended for stainless steel processing is now commonly used for titanium rolling. Office of Defense Mobilization is pushing for special equipment for titanium

Technical Outlook—p. 99 Market Outlook—p. 139

and wants enough to be built by the end of 1956 to be able to process 37,500 tons of ingot. It will allow fast tax write-offs as an encouragement.

Corporate Aid to Education Soars

Corporate giving to institutions of higher education may reach $65 million or $70 million in 1954, an all-time high. In 1950, the latest year for which specific figures are available, corporations granted $53 million as an aid to education. That was 21 per cent of all corporate giving. Studies cited by the Council for Financial Aid to Education Inc. show that the ratio rose to 24.2 per cent in 1953. It may hit 25 per cent this year.

Executive Bonuses More Common

Profits before rather than after taxes are being used as a base for computing executives' bonuses by an increasing number of companies. An American Management Association report attributes that trend to a growing feeling that profits before taxes are a more accurate measure of executives' performance. Compared with an earlier AMA study on the same subject, the new report shows an over-all trend away from the discretionary type of incentive plan toward more formal, objective programs. About 45 per cent of the commercial and industrial firms in the U. S. use incentive compensation for executives.

Fringe Costs Climb

Fringe benefit costs amounted to $720 per employee during 1953, and the expense will be even higher in 1954. The Chamber of Commerce of the U. S. reports that fringes are becoming steadily more expensive—last year's cost was $76 higher than two years earlier. More than 97 per cent of the 940 companies responding to the chamber's survey report payments for employee insurance programs, with payments averaging 1.8 per cent of payroll. Payments for pensions were reported by 81 per cent of the companies, with payments averaging 4.7 per cent of payroll. On the average, fringe payments were 19.2 per cent of payroll, 34.6 cents per payroll hour.

Straws in the Wind

Walter Bedell Smith will join American Machine & Foundry Co. when he resigns this fall as under secretary of State. . . Rep. Emanuel Celler (Dem., N.Y.) called on the Justice department to prevent the merger of Bethlehem Steel Corp. with Youngstown Sheet & Tube Co. . . . An arbitration board has ruled that the Brotherhood of Locomotive Engineers is entitled to a 5-cent boost, the same granted last year to other railroad workers.

This Week in Metalworking

Heavy tooling foreshadows a general business upturn this fall (p. 49). . . What the Studebaker-Packard merger will mean (p. 50). . . Studebaker's Harold S. Vance will be chairman of an ODM committee to rule on filling in gaps in our industrial mobilization program (p.51). . . First-half metalworking earnings were up 8 per cent from the first half of 1953 (p. 52). . . How industrial thievery can be combated (p. 53). . . A labor gimmick, first cousin to the secondary boycott, is springing up to plague industry (p. 54). . . A sound merit rating program can help solve your labor relations headaches (p. 60).

Do This For Just The Deep-Drawing Extra

Here is a series of draws on Armco ZINCGRIP. There's not a flake, not a break in the zinc coating. And the price of ZINCGRIP is *the same as ordinary galvanized steel*, plus the deep-drawing cold-rolled extra, when a normalized deep-drawing steel base is required. Both forming and drawing grades come in standard or special weight zinc coatings that stand up through any operation the steel base can take.

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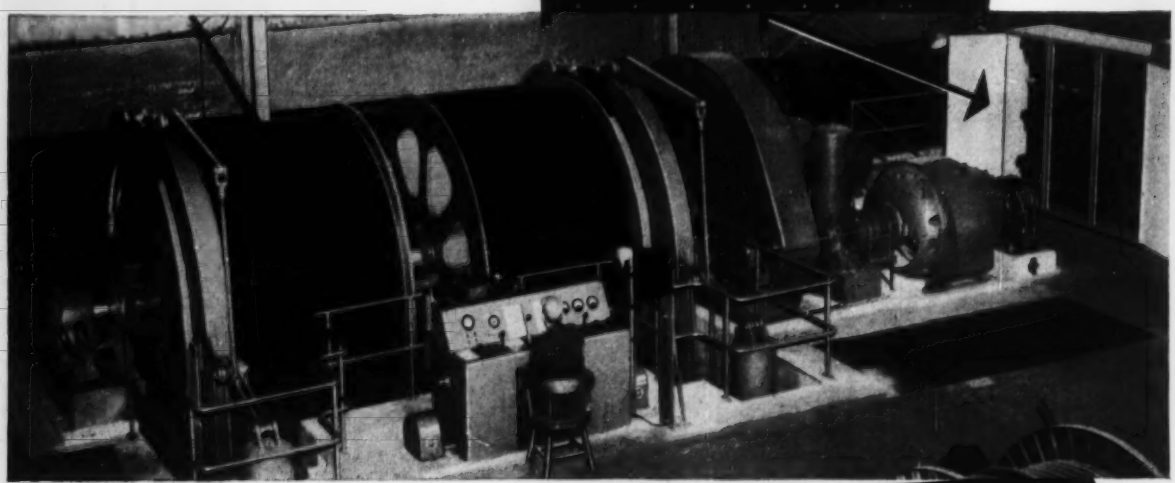

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EC&M Frequency Relays automatically switch motor connections to maintain safe operation under all conditions.

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No. 28 ACCELERATOR Bulletin describes this EC&M hoist control system. Write for your copy.

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Overdue Reform

If thinking Americans, including many industrialists, were not so engrossed with other matters of varied importance, they would hail the new tax revision bill with more enthusiasm than has been accorded it to date. It deserves acclaim on several counts.

In the first place, the bill which President Eisenhower signed last Monday, represents the first substantial revision of the tax code in 75 years. When we compare our nation as it is today with what it was in 1879, it seems incredible that we should have allowed our tax code to continue to be based upon concepts arrived at in the era of the woodburning locomotive and the horsedrawn street car.

After the turn of the century, when the automobile was beginning to change the American mode of living, conditions were ripe for a modification of the code. However, before anything could be done in this direction, World War I was upon us. Its urgent need for high wartime taxes banished all thoughts of tax reform.

In due time came the great depression, when among other absurdities, New Dealers bitterly damned American industry for "overexpanding." During this period a brand new concept of taxing gained headway. It was "spend, spend, spend and tax, tax, tax and ignore the consequences." This was carried into World War II, through the postwar period and into the Korean mess.

When President Eisenhower assumed office, one of his basic objectives was to overhaul the tax structure. He envisioned reforms that would erase the outmoded provisions of an earlier century and would reverse the wild ideas of the reckless spenders of the Roosevelt-Truman period.

The result is a compromise. However, it has these great benefits in its favor. For the first time in decades it strives to encourage investment in free enterprise so that more jobs for more people can be generated. It encourages industrial research and development, which is beneficial to all of the people. It corrects numerous cases of unfair hardship against deserving people in unfortunate circumstances.

History will record this tax reform bill as a monumental reversal of a dangerous trend in tax policy.

E. C. Shaner

EDITOR-IN-CHIEF

WATCH THESE CHANGES: No. 7 in this publication's 1954 management series (pp. 89-96) deals with "Transportation in Distribution." As would be expected, much of the text deals with the functions of the traffic manager. There are plenty of case studies which show that an alert traffic manager who knows freight classifications, rates in relation

to volume and storage or warehouse charges can save his company amounts equaling many times his annual salary.

The thing that makes this subject of transportation of industry's products so interesting and timely right now is that significant changes in shipping and storage practices are occurring with increasing frequency. They are being brought about largely by the increasing competition between railroads, highway trucks, waterways, pipelines, aircraft and even conveyor belts for their share of the shippers' business.

It is estimated that freight charges, on the average, are about 10 per cent of the selling cost of a product. On this basis, the new opportunities for cost cutting offered to traffic managers by new developments in shipping and storing are tremendous.

WHO CARRIES FREIGHT? Interstate Commerce Commission has compiled figures on the estimated volume of intercity freight haulage (p. 93) by all forms of transportation in terms of ton miles. The changes in the use of various forms of transportation from 1939 to 1953 are interesting.

For instance, in 1939 the railroads carried 62.1 per cent of all intercity freight, whereas in 1953 they carried 54.9 per cent of the total. Motor trucks, which transported only 8 per cent of intercity freight in 1939, carried 13.3 per cent of it in 1953. Great Lakes vessels carried 14.1 per cent in 1939 and 10.4 per cent in 1953. Inland waterways increased their percentage from 3.7 in 1939 to 6.7 in 1953. Pipe lines conveyed 12.1 per cent in 1939 and 14.6 per cent in 1953. Airlines, which carried a negligible amount in 1939, carried .02 per cent of the total in 1953.

CURBING PETTY THEFT: Controlling petty theft in metalworking plants can be difficult. Consider the employee who is fixing the plumbing at home. He "borrows" a few wrenches from the shop, fully intending to return them. Finally, after much procrastination, he finds them so useful around the house that he "forgets" they belong to the company and "neglects" to return them. This man is not to be bracketed with the hardened criminal who conspires to rob the company of costly tools or materials. Nevertheless, the loss to the company from petty pilferage often exceeds that resulting from grand larceny.

A study by the National Industrial Conference Board (p. 53) shows how losses from petty theft can be reduced. A major "must" is to clamp down hard on loose practices which virtually invite people to steal. Some manufacturers who have arranged convenient means of lending tools to employees for home use and of selling appliances to them at cost have been rewarded by sharp reductions in losses from petty theft.

TOUGH ON SUPPLIERS: A tabulation by the National City Bank of New York (p. 52) shows that 225 metalworking companies earned 8 per cent more in the first half of 1954 than in the corresponding period of 1953. However, a breakdown by types of companies reveals sharp differences in earnings.

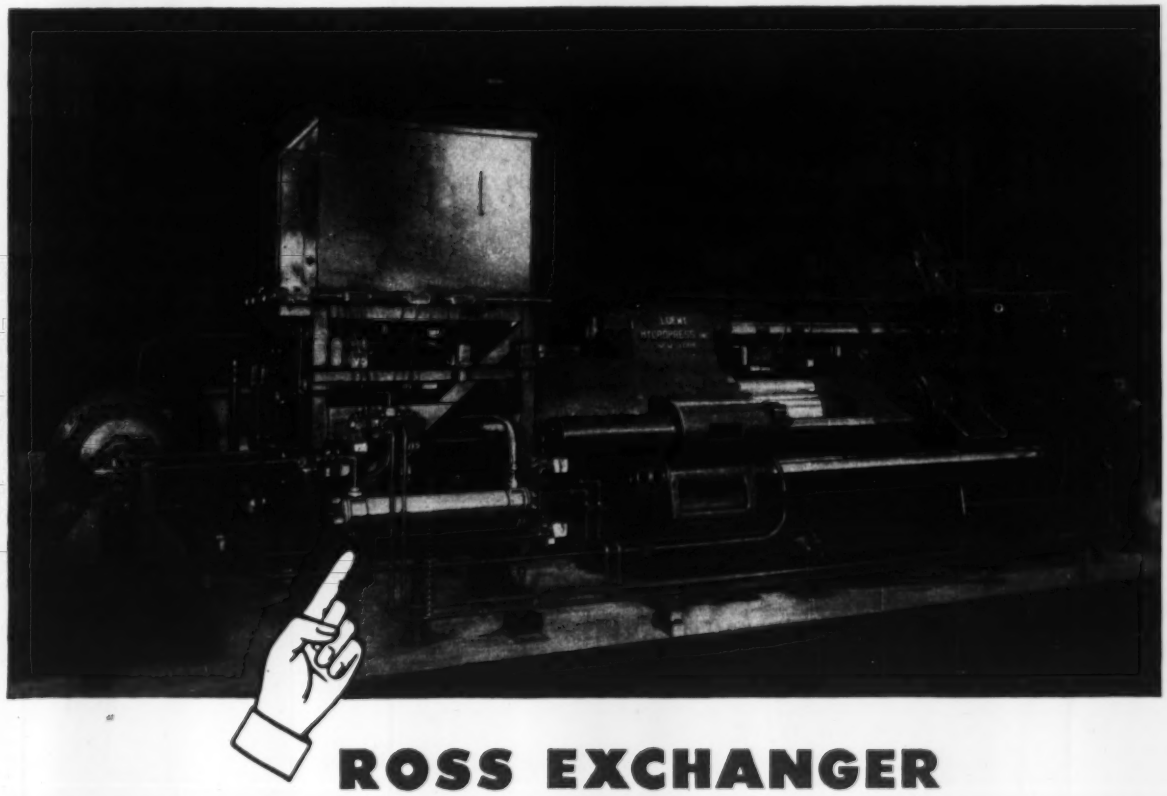
For instance, automobile and truck manufacturers earned 35 per cent more in the first half of 1954 than in the first half of 1953. Other increases were 13 per cent for manufacturers of heating and plumbing equipment; 17 per cent for makers of electrical equipment, radio and television; 15 per cent for machinery builders; and 23 per cent for manufacturers of office equipment. In sharp contrast, earnings of auto parts manufacturers declined 14 per cent, of iron and steel producers 16 per cent and of railway equipment manufacturers 29 per cent.

In the face of these figures it looks as if the economic adjustment is good for assemblers and bad for suppliers.

NEW USES FOR STEEL: In our complex economy, nobody can predict how new developments in merchandising will affect industries far removed from retailing. At the present time, there is a rush to build new supermarkets in the fringes of large cities. Many of the stores in these markets are of the self-serve type.

One reflection of this development is that a small midwest fabricator, who buys about 15,000 tons of wire a year (p. 55), uses a substantial portion of this tonnage for baskets, carriers and other articles for use in supermarkets. Also, one finds conveyors being used in retail stores more extensively. Retailing may mean more to metalworking in the future.

Cooling Hydraulic Oil ...WHILE THIS 1250 TON LOEWY-HYDROPRESS OPERATES AT 28.5 IPM EXTRUSION SPEED



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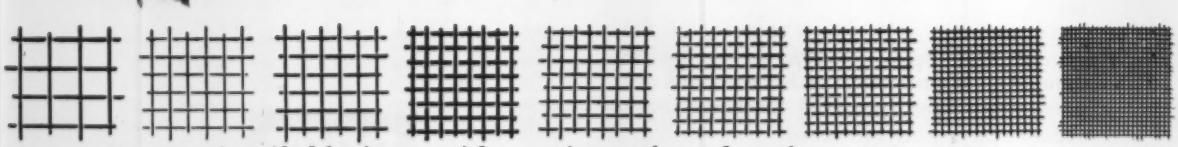

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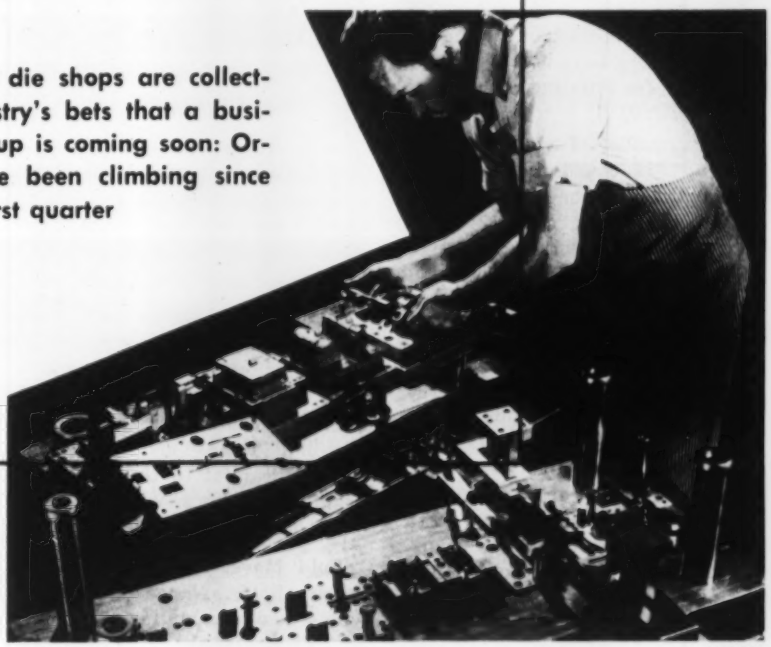
Tool and die shops are collecting industry's bets that a business pickup is coming soon: Orders have been climbing since a slow first quarter



NTDMA

Heavy Tooling Foreshadows Fall Upturn

"BUSY AS HELL"—that's the way one tool and die official answered STEEL's question of "How's business?" The reply indicates that better things are in store for industry generally a few months hence.

Consensus is that tool and die job shops this year will do about $720 million worth of business, off 10 per cent from 1953. The volume would be even closer to last year's levels had it not been for a poor first quarter. Activity has been climbing since then, and in June it matched the June, 1953, rate.

Significance—The contract tool and die industry is more than just an industry. It's also an economic barometer. Its volume today gives a clue about what the mass production industries are tooling up to produce tomorrow.

The clue today is that auto companies are betting a lot of money in new tools, dies, jigs and fixtures that their tomorrow will bring more orders and more production. Automotive volume now accounts for much of the shops' activity, especially around Detroit. Household appliance, electronic and aircraft orders are also encouraging. While the upturn is nationwide, it's noticeably stronger in the Motor City.

Urgency—Most business is coming in with "urgent" tags on it, and many shops are working close to 50 hours a week currently. But even with the pickup, some shops are still hard hit. Most report that backlogs are way down. Just about all shops can get to work on new orders right away, even those reporting "comfortable" backlogs. Lead time depends mainly on the intricacy of the work.

Along with the upswing in orders is another prominent trend —plenty of shopping around, with price and delivery conciousness the rule for purchasing agents. Some shops report two to four times the year-ago number of inquiries.

Sore Spot—Defense work is a sore spot. Not too long ago many shops relied on that for over half of their business. Now, a survey of trustees of the National Tool & Die Manufacturers Association shows defense work ranging from 10 to 50 per cent of business. Only one respondent reported defense business over 50 per cent; the majority are probably on the low side. Some shops have had to turn to precision machining and production work to keep going.

The fact that over-all tool and die business is expected to be off only 10 per cent for the year in spite of defense cuts indicates the volume of civilian ordering and adds strength to the optimistic forecasts for fall.

More Tooling—There is feeling that more defense programs, especially in new types of aircraft, will be tooled up late this year. A related boost in aircraft component requirements and increases

in household appliances and television are expected to haul in most of the slack when auto tooling is over. Some small gains in defense orders have already come; the looked-for ordering is expected to be "heavy."

But a number of manufacturers, especially in Southern California, have taken over their own tooling. If this spreads it could be dangerous, warns George S. Eaton, NTDMA executive secretary, because it is vital to national security that a broad base of subcontractors be maintained.

Weeding Out—At present, the labor supply in the industry is relatively good. Some of the less skilled and less productive workers have been weeded out, but no expert tool and die maker has to worry about work. Some shops "have picked up good people."

Additional progress has been made in apprentice programs, although it is hard to convince some shops to expand this phase of employment now—the more so since the acute shortage of apprentices has eased a little. But a high-level program still is needed to insure an adequate supply of trained workmen.

Studebaker-Packard: Shift Into High?

Speculation on the merger of Studebaker and Packard has that duet expanding rather than contracting. Here's what you can expect

UNITED in a tender Wall Street ceremony, more than the usual interest attends the Studebaker-Packard mode of setting up housekeeping.

Prior Kaiser-Willys and Nash-Hudson moves have been labeled by many as retrenching operations. In the case of Studebaker-Packard, while both firms bring first-half losses and a reduced working capital to the altar, new head of the house—James Nance—is not known as a retrencher.

Bold Moves — Less than two years of Mr. Nance at Packard will see auto manufacture moved entirely out of the buildings it occupied for upwards of 50 years. Engines, transmissions and chassis will be assembled at Utica, Mich., with bodies and final auto assembly at the nearly renovated Conners plant in Detroit.

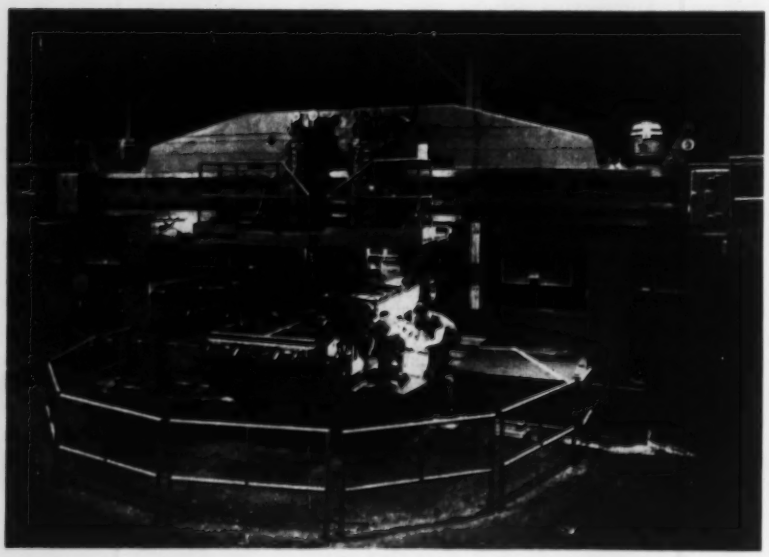
Mr. Nance may well have already made his first move at South Bend. The labor situation just straightened out would have given James Nance the hatchet-man label among Studebaker employees, jeopardized possible future moves. Already recognized by Studebaker's Hoffman and Vance (see STEEL, June 21, p. 87), the situation was one which needed cleaning up before things took on the Nance label. More moves are undoubtedly ahead.

Probable Method — Expect Mr. Nance to go to South Bend shortly, study conditions carefully and announce a program. Formulation of the program may take about three months for James Nance is a man who double checks his facts. Once the facts are in expect action, probably paralleling action at Packard where conditions were somewhat similar.

Present Studebaker philosophy, for example, says: "Stick with the present buildings because the cost of obsolescence is less than rebuilding." That was the case at Packard now headed for a new home by year end. Precedent indicates equally fundamental shifts at South Bend. Moves will come fast, expanding rather than contracting operations.

Motors Will Move — A strong key to the program will be the new Packard engine plant at Utica. Watch for the Studebaker President line to be revived shortly, include the smaller of the new Packard V-8 mills. The Studebaker engine, a V-8 dandy, is simply too small to go the route in the middle-upper-class horsepower derby. Watch for it to move down into the lower-priced Studebaker lines. Expect the Studebaker Champion to be priced with the low Big Three shortly as Studebaker-Packard brackets the market.

The Packard V-8 also will be useful in Studebaker trucks, permitting a bid for the heavier-



Beating Plowshares Into Weapons

Army Ordnance Corps has just removed the wraps from a 155-mm, self-propelled howitzer being manufactured by the Massey-Harris Co. at Racine, Wis. The new howitzer is in the light tank class. In the scene above, part of the howitzer hull is being machined on a 25-foot boring mill in the Massey-Harris plant

duty-job field. The Studebaker truck plant, incidentally, as a modern facility seems one of the more likely to remain unaltered in South Bend. A key to the Studebaker - Packard operation: The firm will embrace the philosophy of the full line giving Mr. Nance play for his powers as a market strategist.

Suppliers Situation — Undoubtedly the new firm will develop a strong central engineering department, concentrate on the innovations that leaders of both original firms considered essential to success of the independent. Expect the new firm to work closely with suppliers as well, utilize the formula of supplier co-operation as a substitute for working capital. This formula was used with success by Chrysler some years ago. With slumping sales, Packard facilities moves and Studebaker styling moves, the working capital situation obviously will need some work. Prudential Insurance has already expressed a willingness to invest more in the auto industry following its loan to Chrysler, could figure in future moves of the new corporation.

Savings in manufacturing costs of $10 million are cited in the proxy statement which preceded the merger. Foundry and stamping facilities seem likely to be dovetailed in the near future. Longer range consolidations could include transmissions as well as engines cited, though Borg-Warner units seem likely to carry on for Studebaker for at least the next model year. Biggest gap is body stamping facilities, probably to come with design for interchangeability of parts at least two years down the road.

Growing Up—Keep your eye on Studebaker-Packard. This looks like the core of a growth-minded corporation. Expect the firm to add other products to its lines, embrace a philosophy of expansion rather than retrenchment. This is the firm that will probably be the core of further industry mergers in the immediate years ahead. Kaiser-Willys many believe is about ready to bow out. That leaves American Motors. Already planning to use the small Packard V-8 in 1955 models, the firm undoubtedly would enjoy having the Studebaker engine for its smaller jobs. A further consolidation of Studebaker-Packard with American Motors looms likely, would leave a big four in the auto industry. A quick count recalls more than 20 major firms swallowed in the formation of General Motors, however.

Reports on the Studebaker-Packard wedding indicate it will be a beautiful marriage. Now how about a family?

Studebaker Chief Heads New ODM Advisory Committee

HAROLD S. VANCE, president of Studebaker Corp., has accepted the chairmanship of a yet unnamed committee which will be one of the most important in Washington for industry.

Acting as advisor to Dr. Arthur S. Flemming, director, Office of Defense Mobilization, the committee will decide on proposals to fill in deficiencies in the present mobilization base.

Deciding Vote—It will have the deciding vote on whether reserve defense inventories of 3-inch and heavier plates will be built up at high-pressure boiler plants, whether capacity for producing steel castings of 10,000 pounds and over should be increased, whether additional tooling and other facilities are needed for producing turbines and turbine gears, whether more facilities are needed for producing optical elements and like problems.

The committee, which will start to function about October, is to study expansion and stockpiling recommendations of the ODM staff and approve or disapprove them.

Procedure—Those that are approved will go to the ODM Borrowing Authority Review Board which, by means of accelerated tax amortization and guaranteed loans, would undertake to get the programs implemented by private industry. Failing that, expansion plans would be carried out with public funds under authority of the Defense Production Act which authorizes $2.1 billion for such use.

NEA

MR. VANCE TAKES OVER
. . . on a new ODM committee

Building up of reserve inventory of components and raw materials would be done at private plants under contracts with the General Services Administration.

Has Approval—The whole procedure has been approved by the cabinet-level Defense Mobilization Board, so that the new setup is expected to work smoothly and without delays that have marred the mobilization-readiness program in the past.

Final make-up of the new committee has not yet been determined, but the membership will include top industrialists, as well as top government officials, particularly from the Department of Defense.

Truck Firms To Reciprocate

International Harvester Co. and Diamond T Motor Car Co. announced a reciprocal agreement under which Diamond T will assemble some special models of Harvester trucks and Harvester will manufacture certain Diamond T truck components.

Harvester has found it impractical to assemble larger specialized types of trucks at its Fort Wayne, Ind., plant, W. C. Schumacher, vice president, explained. E. J. Bush, president of Diamond T, said Harvester has supplied his company with cab assemblies satisfactorily for several years and it was decided to expand that agreement.

Industry	Net income first six months (in thousands of dollars) 1953	1954	Per cent change
Automobile and truck	$315,793	$427,639	+35
Automobile parts	51,578	44,263	−14
Building, heating, plumbing equipment	23,914	27,120	+13
Electrical equipment, radio and television	149,486	174,544	+17
Iron and steel	314,761	265,155	−16
Machinery	66,030	75,763	+15
Office equipment	30,816	37,806	+23
Railway equipment	23,248	16,535	−29
Miscellaneous	195,812	196,417	——
Total	1,171,438	1,265,242	+ 8

Source: National City Bank of New York.

Metalworking: Strength for the Economy

Reports show that metalworking's earnings were 8 per cent higher in 1954's first half than in the same 1953 period. The all-industry average was only 2 per cent

METALWORKING'S STRENGTH in the nation's economy is pointed out in a tabulation of the earnings of 660 companies by the National City Bank of New York.

Reports from 225 metalworking firms show their profits were up 8 per cent in the first half of 1954 as compared to the like 1953 period. The average for all of the 660 companies in the survey was 2 per cent.

Noteworthy—But like all industries of the nation, metalworking has its soft spots (see table above). Troubles of the railway equipment builders and the iron and steel industries are well known, but the marked difference in earnings of auto and truck producers (up 35 per cent) and auto suppliers (down 14 per cent) is significant.

Competitive pressure in the auto business and the effects it's having may be a forerunner of what can be expected in other consumer lines, such as appliances, radio and TV and similar items. Here's what's happening, says a Midwest auto parts supplier:

The Reasons—1. With the reduction in many defense items, many manufacturers are switching to the auto parts field which looked real lucrative last year. "The result: We saw more competition enter the field last year than we cared for."

2. Automakers are waging a sales battle in which the price is a major factor. "They won't listen to a parts price boost, no matter how much our labor and material costs have gone up. In fact, they're constantly asking us to go over our pricing in an effort to trim their costs."

3. Prices for auto parts are just naturally being forced down by the two above factors. "When we have to figure closer to the vest, it's bound to be reflected in the profits picture."

4. Automakers are making more of their own parts, cutting down the over-all market for suppliers.

Comparison—Here's how metalworking compared with some of the other industrial groups: Food products was up 18 per cent for period, paper and allied products up 23 per cent. Other increases (10 per cent or less) were reported in chemical, petroleum, mining and quarrying and utilities. Major decreases were in textiles and apparel, down 64 per cent, and railroads, down 45 per cent.

Raw Material Consumption High

Last year's record output of iron and steel required larger total amounts of major raw materials than ever before: 137.2 million net tons of iron ore, 101.3 million tons of coal, 70.9 million tons of coke and 37.9 million tons of limestone.

American Iron & Steel Institute reports iron ore required for each ton of pig iron produced averaged 1.691 tons, coke 0.906 tons, and limestone 0.418 tons. Key factor in each of these per-ton reductions from previous levels was improvement in the quality of iron ore, largely the result of more and better beneficiating.

Notable, too, of conservation in the steel industry was in the use of tin for the manufacture of tin plate. During 1953, a record 4.8 million tons of tin plate was manufactured, requiring 37,618 tons of tin. In 1950, when 4.6 million tons of tin plate were produced, 42,442 tons of tin were consumed.

Consumption of manganese by the steel industry last year was about 582,000 tons, an increase of more than 25 per cent over that of 1952.

New Plastics Company Formed

Tube Turns Plastics Inc., a new company to manufacture industrial plastic pipe fittings and custom-molded products, has been organized by Tube Turns Division of National Cylinder Gas Co. and Jackson & Church Co. The plant will be located at Louisville.

Its products will be made through a new patented process of injection molding of unplasticized polyvinyl chloride. Market for these products will be the oil, paper, chemical, food and allied industries.

Act Sets Up Unemployment Fund

In periods of heavy unemployment states now can replenish the reserves in their unemployment insurance accounts by borrowing from a $200-million reserve fund set up under the Employment Security Administrative Financing Act.

The act, which has been passed by Congress and sent to the White

House for the President's signature, sets the fund build-up from the federal share of the unemployment tax not spent for administering the unemployment insurance program.

Any surplus federal collections after the reserve fund has reached $200 million could be distributed among the states. Request for an appropriation to enable the Labor department's Bureau of Employment Security to carry out this new legislation still awaits action by Congress.

Fast Tax Write-Offs Granted

Oil companies took the three largest certificates of necessity for accelerated tax amortization issued by the Office of Defense Mobilization during the two-week period from July 14 through July 28. In all, certificates were issued for 52 new or expanded facilities amounting to $47,857,316.

Sinclair Refining Co., Texas Co., and Gulf Refining Co. were issued the largest write-offs for petroleum refining facilities. Of the 52 certificates issued, 16 were for facilities involving small business.

Also granted the fast tax write-offs were Porter Bros. Corp., Valley & Boise Counties, Idaho, 80 per cent of $1,297,902 for production of columbite and tantalite ores; and Fisher Governor Co., Marshalltown, Iowa, 40 per cent of $1,595,000 for production of scientific and technical instruments. Three of the nation's large railroads, Baltimore & Ohio; Chicago & North Western; and Chicago, Rock Island & Pacific, were awarded write-offs to purchase rail passenger cars.

Shipping Fleet On Decrease

Privately owned United States dry cargo and passenger ships continued a steady decline in numbers and tonnage during the first six months of 1954, the American Merchant Marine Institute reports.

Against a Jan. 1 total of 806 vessels of 8,388,000 deadweight tons capacity, the inventory of July 1 shows 793 ships of 8,296,385 deadweight tons. On July 1, inactive tonnage in the United States reached a postwar high of 1,115,000 deadweight tons.

Theft control: Here Are 7 Suggestions

A National Industrial Conference Board Inc. study shows that prevention is the best approach to avoid public relations headaches and out-of-pocket losses

1. Conduct an employee education program.

Run a series of articles in your plant paper or on bulletin board notices emphasizing the threat of job loss in case of thievery. Publicize the solving of a theft.

2. Alert your supervisors to theft prevention.

Make sure they understand the importance of controlling pilferage. They can take precautions against "open temptation" conditions and loose practices which inspire thefts. They should report all thefts when discovered so immediate action can be taken.

3. Improve your inventory control and auditing procedures.

Slipshod controls are an invitation to theft because the loss may not be discovered. Periodic inspection by department heads and protection personnel on how property is handled helps develop better procedures and reduces chances of theft.

4. Improve vehicle control and package pass systems.

It's best to keep as many vehicles out of the plant as possible. These are helpful: Vehicle inspection before leaving premises, escorts for all vehicles entering premises, entering and departing authorization systems. Package pass systems take many forms; most employ use of slip signed by authorized person describing material being taken out, time and date, employee's name and clock number.

5. Maintain a good lock and key control system.

Good systems provide complete records of all locks and keys and to whom issued or loaned. A charge is normally made for lost locks and keys. Master key set goes to security personnel.

6. Improve your guard force.

Train them to recognize abnormal employee actions which might be a tip-off to a possible theft. Guards should give special emphasis to certain areas where thefts are more likely to occur. Rotate your guard force so that guards do not become too friendly with other employees.

7. Loan tools or sell your products to employees at cost.

Some companies, to reduce the theft of small hand and power tools, have set up a system to loan tools to employees for home use. Many firms making household items like appliances, radio tubes, power tools and similar items have a policy of selling them to employees at cost.

Unions Dust Off Boycott Gimmick in Jurisdiction War

Caught in the middle, an Ohio firm can't sell its products because it has the wrong union. Neither can it get relief under law

ADD UNION boycotts to your competitive battle for markets today, and it's like fighting with one arm tied behind you.

Reeves Steel & Mfg. Co., Dover, O., produces rain spouting, furnace pipe and air ducts. Its employees are CIO. But Reeves can't sell its products in Cleveland and Chicago because its customers' employees there are AFL and refuse to handle CIO labeled products.

Smoke Warnings—This situation—particularly among the smaller companies in the nation—is not new. But efforts of the small Ohio town's Chamber of Commerce to keep jobs for a large part of the town's work force is focusing the national spotlight on the problem. It's important for two reasons: 1. This is a union clash on the local level. What happens if these tactics are adopted nationwide in the large plants? 2. What recourse does a company have when confronted with such a boycott? Apparently none until new legislation is adopted or a previous interpretation of the Taft-Hartley is modified.

Carrying the ball for Reeves and its 600 to 800 employees, Dover's C of C went to Washington and got these results:

Study Promised—At the Justice department the C of C claimed such action was in restraint of trade. Justice officials said there was nothing they could do, but they would study the problem.

At the National Labor Relations Board, officials told Dover's C of C they weren't sure of possible action. The problem is becoming more acute says NLRB, and there are currently two similar cases before the board awaiting decisions. A NLRB ruling about four years ago made valid contract clauses by the AFL with its employers that gave the union the right to refuse to handle certain goods.

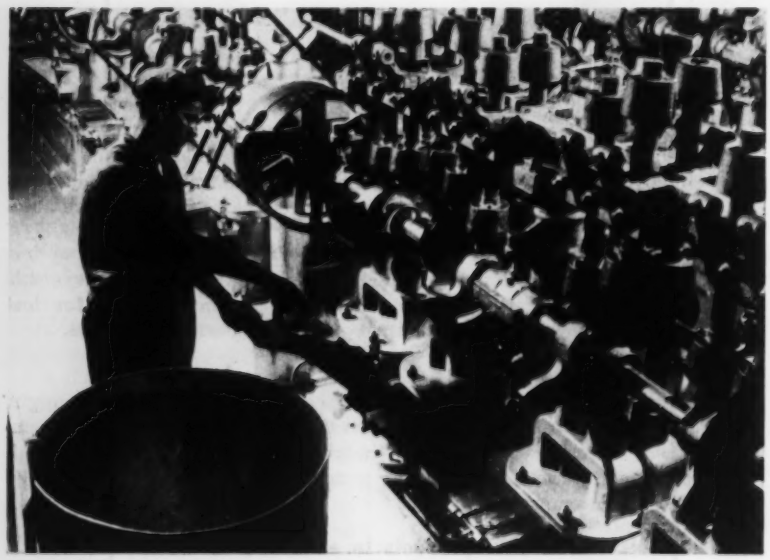
Rep. George Bender (Rep., O.), head of the House committee studying labor racketeering, was contacted next. There the Dover men were told that subcommittee hearings might be held in Cleveland on the problem.

Union Reaction—While the Dover C of C is getting little more than promises to study the problem, CIO union officials—at least on the local level—are digging in for battle. District United Steelworkers officials at Canton, O., who are currently in the middle of contract negotiations with Reeves charge that the AFL tactics are just a maneuver to get around the no-raiding pact. "We're not going to sit back and let the AFL get into the plant," states John Johns, Canton CIO head. "The same thing is happening at Berger Mfg. Div. of Republic Steel Corp. (also in Canton) which we represent. You know, we could apply the same tactics on the AFL."

But while the Dover C of C waits for Washington wheels to turn and the unions plan their strategy, manufacturers must continue production and sales efforts to market their products.

On the Outside—Reeves' President A. J. Krantz says, "There's not much we can do. We're on the outside looking in." C. A. Olsen Mfg. Co., Elyria, O., is experiencing boycott trouble with products made by its subsidiary, Henry Furnace Co., Medina, O., and is unable to do much about the problem.

One answer—and an expensive one—is seen in the action by Neon Products Inc. of Lima, O. Milton



Pounding Out Powder for Pigment

An unusual metalworking scene—long rows of hammer mills pound aluminum into tiny flakes that will become pigment for paint. The mills, in Reynolds Metals Co.'s Plant No. 3 in Louisville, Ky., produce 12 million pounds of aluminum powders annually. Powder uses include paint, inks, protechnics, roof coatings

Kamin, vice president, explains that their boycott troubles date back to 1946-47. Neon's 400 Lima employees are CIO and when the pressure became great enough Neon decided to build a branch in Kokomo, Ind. "Fortunately," says Mr. Kamin, "the employees there voted in the AFL International Brotherhood of Electrical Workers. Now we have no boycott troubles, but it's expensive—we had to duplicate our facilities." Neon reports it was confronted with boycotts in St. Louis, Cleveland, Memphis, New Orleans, Chicago and more recently in Milwaukee and Los Angeles.

Business Flying Rises Sharply

America's fleet of business planes today is almost 17 times larger than the fleet operated by the nation's domestic airlines, says the Aircraft Industries Association.

Latest figures show business planes now number 21,500, of which 2437 are multi-engined and 19,063 are single-engined, a sharp rise. Aircraft on scheduled airlines total 1269.

Guide for Community Salesmen

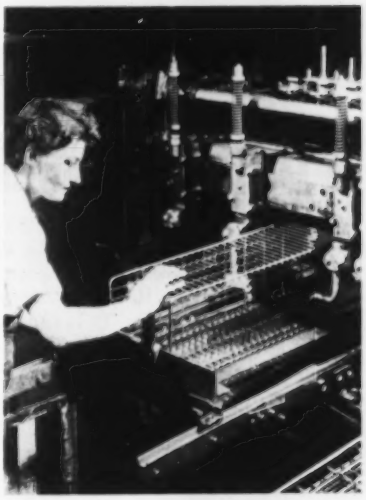
"Finding Prospects for Community Industrial Development," a pamphlet containing instructions to enable communities to obtain new industries, is available from the Chamber of Commerce of the United States, 1615 H St., N.W., Washington, for 50 cents a single copy or reduced prices for larger orders.

Surplus Sales To Be Announced

Announcements of the federal government's proposed surplus property sales now appear in the "Synopsis of Proposed Procurement, Sales and Contract Awards," published daily by the Department of Commerce.

This new service has been inaugurated to keep American businessmen informed on the government's surplus property sales, Sinclair Weeks, secretary of Commerce, said. Heretofore, the "Synopsis" has included information of proposed purchases by the federal government and announcements of prime contract awards.

Formed Wire: *A new twist at every turn*

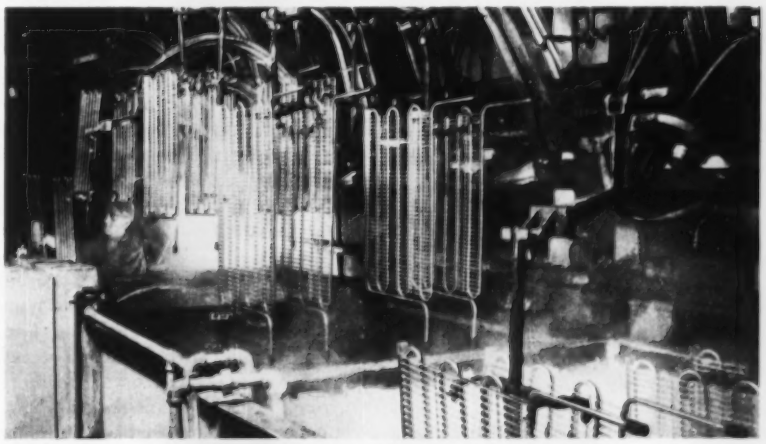


The ice cream hardening case being welded above is just one of 400 special sizes for which United has forms

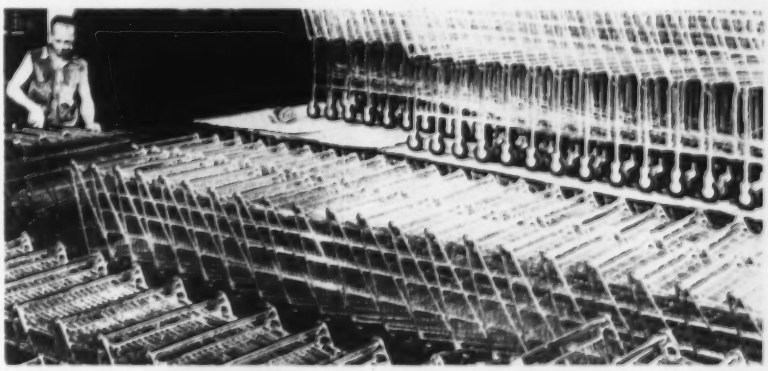
AN INDUSTRY growing so fast it can't even be measured: That's the formed wire products industry. A simple twist of the wire can lead to a new product.

Each year United Steel & Wire Co., Battle Creek, Mich., consumes 15,000 tons of wire to make some 4.5 million refrigerator shelves, 900,000 milk crates and ice cream cases, 750,000 baskets, 100,000 shopping carriers and thousands of other wire products.

United's wire, most of which comes from Pittsburgh Steel Co., ranges from nearly ½-inch to less than 1/10-inch diameter. It is strong and rigid but of light weight and must have a smooth surface.



Home freezer shelves get bright chrome finish on this automatic plating line. Because plating magnifies imperfections, wire must be extra clean and smooth



Carriers of many varieties used by supermarkets come from United Steel & Wire at a rate of 500 a day. The finish must be smooth to prevent torn packages

By E. C. KREUTZBERG Washington Editor

How NSIA helps in . . .

Putting Industry on Defense Team

UNIQUE in two respects is the National Security Industrial Association, which has just moved its national headquarters from New York to Washington:

1. In contrast with associations that contact the defense agencies on specific matters, NSIA is set up to deal with any kind of an industrial problem on which defense agencies need help.

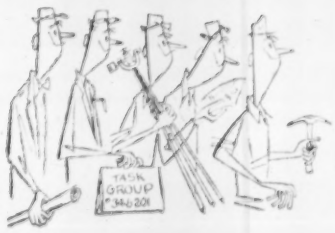
2. It is unique also in that it was created at the suggestion of a government official.

As John Jay Hopkins, chairman of the board of trustees of NSIA, and chairman and president, General Dynamics Corp., puts it, "Industry is the fourth member of the defense team," adding that it is NSIA's job to insure adequate co-operation by industry in fulfillment of that function.

NSIA was launched in 1944 as the Navy Industrial Association, on the initiation of the late James Forrestal, then Secretary of the Navy. In 1947 when the Unification Act became effective, and Mr. Forrestal took office as the first Secretary of Defense, he requested a broadening of the NIA to serve all the armed services, whereupon NSIA succeeded the NIA. Recently NSIA has undertaken to broaden its services still more to include all the defense-related services of the government, such as Atomic Energy Commission, Maritime Administration, Business and Defense Services Administration, General Services Administration, Office of Defense Mobilization and any others that may call upon it.

No Campaigning . . .

NSIA is unique in some other respects. Its main purpose is to help the defense agencies and American industry to solve mutually problems which they are unable to solve alone, thus strengthening our national security. It does no selling. It does not lobby. It launches no programs. It stands by until given an assignment by the armed services or other defense agencies. Then it sets up a committee to



study the problem and comes up with a recommendation. In appointing such a committee, it aims at enrolling the best talent in the nation on the particular subject.

These committees are organized as requested by defense agencies and are disbanded when they have completed their tasks. At present NSIA has 12 active advisory committees — ordnance, material handling, simulators, air cargo, detergents, food service, forest products, medical - surgical, packaging, patents, procurement, rubber and elastomeric. Five others, LVT track and suspension, research and development, military construction and engineering, paints and related protective coatings, and bureau of ships contact committee have largely completed their work.

Special Task Groups . . .

Each committee has task committees assigned to parts of its particular problem. Task groups are organized exactly like the main committees, of members and nonmembers, with industry chairmen. Membership includes all shades of interest. For example, the Ordnance Committee is comprised not only of makers of ordnance, but also of suppliers of steel, other materials and components that go into ordnance. The steel representation is important in view of the effort to find suitable substitutes for high-alloy steels for guided missiles and other ordnance items. Similarly, the Materials Handling Committee has not only manufacturers and users of the equipment, but also other interests as insurance companies which are concerned with cargo handling as it affects underwriting.

An interesting new committee is that on simulators which is concerned with electronic devices that reproduce or simulate actual conditions experienced in military situations—as naval gunfire simulators, submarine attack simulators, aircraft simulators. The aim of this group is unification of industrial-military thinking.

First-Hand Observation . . .

On the theory that a manufacturer can best improve his product after observing it in service, NSIA stages frequent visits by its members at representative military and naval establishments both ashore and afloat. The bulldozer or lathe

manufacturer thus sees his machine in military applications and talks with the operator.

To insure best co-operation on the basis of effective understanding, NSIA's executive staff is largely composed of former senior officers of the armed forces. Executive Director is Commodore J. K. Richards, U. S. Navy, retired.

Current officers of the NSIA in addition to Mr. Hopkins are: Homer H. Ewing, director, development department, E. I. du Pont de Nemours & Co. Inc.; and chairman of the Executive Committee John A. Hill, president, Air Reduction Co. Inc.

How Do You Measure Progress?

Progress in rolling mill design is measured in dollars and cents. When a new mill will outdo its predecessor in output, accuracy and conversion costs per ton—that's progress.

The many Morgan mills in operation and under construction are proof that progress in this field is measured with a Morgan yardstick. How about getting our ideas on your new project?

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Rolling Mills - Morgoil Bearings - Wire Mills
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RM-81

Above is shown a horizontal-vertical rolling mill built in 1867. Here is the Skelp Mill at National Tube, Fairless, built in 1953.

KX-99

PROVED IN SERVICE

15 LEADING STEEL COMPANIES USE A. P. GREEN KX-99

CHECK THESE OUTSTANDING PROPERTIES OF KX-99

1. Special high fired, Missouri super duty fire-clay brick.
2. No sign of carbon monoxide disintegration in 1000 hour test at 900° F.
3. Apparent porosity in the range of 8 to 12 per cent with an average of 10 per cent.
4. Bulk density in the range of 2.30 to 2.40 grams per cubic centimeter.
5. Average modulus of rupture 1800 to 2500 pounds per square inch.

KX-99 Blast Furnace Brick are manufactured to extremely close tolerances . . . uniform in dimensions . . . free from warpage.

KX-99 Blast Furnace Brick are recommended for Complete Blast Furnace linings, Hot Metal Mixers and Hot Metal Cars. They were developed to meet the service requirements in the Steel Industry. They resist carbon monoxide disintegration, slag action, chemical action and abrasion.

For detailed information on service and specific recommendations—contact your local A. P. Green Representative or write

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Europe's Steel Output Buoyant

European steel production rises enough in the second quarter to pull first half, 1954, ahead of first half, 1953. No sinker for steel output seen yet

STEEL OUTPUT in Europe, after a weak-kneed first quarter, is growing stronger all the time in 1954.

Even without any international jolts like Korea, second half steel output shapes up to be as good or better than the second half last year. Net result, in turn, will be steel production in 1954 about equal to that of 1953.

Shape Up—At the end of the first quarter, 1954, steel output for the major European producers (Belgium, England, France, Italy, Luxembourg, Netherlands and West Germany) stood at about 16.2 million tons compared with 16.8 million tons for first quarter, 1953. By the end of first half, 1954, however, steel output for those countries stood at 32,767,900 tons compared with 32,751,400 tons for the first half of last year.

Increases in output in late second quarter for Germany and Belgium and increases for each month of the first half for Italy and Britain more than made up for decreases in output by France, Luxembourg and Belgium (earlier in first half).

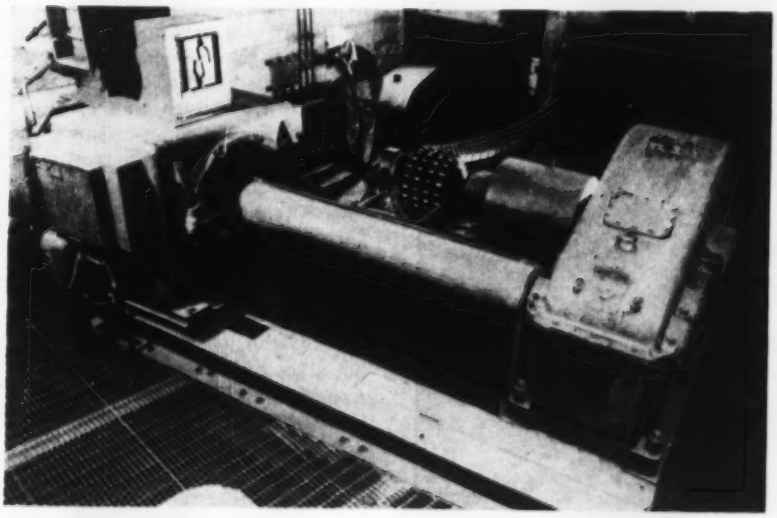
From Belgium—"The level of activity in the metalworking industries here appears to be favorable, with prospects for September business even better." Employment in metalworking industries has increased to 171,354 presently from 167,000 in January, 1954. Average monthly employment in metalworking in 1953 was 160,430 and in 1952 it was 167,645.

From Germany—"Steel people are rather optimistic here. Employment in the steel industry has further improved in July and there are now 86 blast furnaces operating compared with 80 in January, 1954." There is a certain amount of nervousness in Germany, however, over impending strikes. Nub of the trouble is the German policy of holding earnings for investment in badly needed new plant and equipment. Workers feel time has come to pass some of the fruits of German industrial recovery on to the workers.

From England — Steelmen in Britain are well pleased with the drift of world steel markets. Prices of continental producers are rising on certain light steel products (see STEEL, Aug. 2, p. 127) which tends to close the price gap between continental and British prices.

At the same time there is a noticeable easing of import restrictions on steel in certain British export markets, particularly Australia and New Zealand. Exporters say they expect the dropping of restrictions elsewhere soon. Home consumption of steel in Britain is strong too. The U. K. may very well set another record steel production year in 1954—first half was 430,000 tons ahead of first half, 1953, the previous record year.

European steelmakers generally are proving themselves equal to the competitive demands of 1954.



Last of a Big Order

Last of $3.5-million worth of electrical equipment has been shipped by International General Electric Co. to Orinoco Mining Co., U.S. Steel Corp. subsidiary, at Cerro Bolivar and Puerto Ordaz, Venezuela. Says E. H. Sheahan, commercial vice president of IGE, "This represents the culmination of more than five years' work with the customer and other suppliers on Venezuela's most important economic development since the discovery of oil." IGE's orders began back in 1950

Foreigners Buy U. S. Stocks

A new study by John Boddie and Sara Bielouss of the Commerce department shows foreigners held more than 60 million shares of U. S. stocks with a market value of $3.7 billion at the end of 1953. At the same time foreign holdings of U. S. bonds—which had accounted for $3.8 billion out of $5.5 billion in total foreign investments in U. S. firms in 1914—had shrunken to less than $200-million worth.

The study shows further that six countries hold over 84 per cent of the total value of foreign-held corporate stocks. Swiss holdings are heavy in chemicals ($71 million or 35 per cent of total foreign holdings in that industry); Canadian holdings are heavy in paper ($27 million but 75 per cent of total foreign holdings in that industry); and United Kingdom holdings are heavy in utilities ($70 million or 30 per cent of total foreign holdings in that industry). Other big-holding countries include the Netherlands, Belgium and France.

Merit rating—it's one way to . . .

Eliminate Pay Inequities in Your Plant

Wage schedules set up on a hit-or-miss basis can often lead to poor labor relations. Job rating and employee merit rating can give you a systematic pay system and other dividends too

Here's How Employee and Job Rating Can Help You

1. Eliminate pay inequities among workers.
2. Establish definite relationship between one job and another.
3. Eliminate overpayment and/or underpayment of jobs.
4. Assist in making decisions for promotions, dismissals or layoffs.
5. Develop fairness and impartiality on part of supervisors.
6. Stimulate self-improvement among workers.
7. Develop worker confidence in management's fairness and sincerity.

Here is an example of how one company has rated four jobs in a range of 10 grades and the pay range under five merit groupings

Job and Grade		Wage rate in each merit group				
		5	4	3	2	1
Shop laborer	10	$1.31	$1.34	$1.38	$1.42	$1.46
Fireman	7	1.55	1.59	1.63	1.68	1.73
Turret lathe operator	5	1.74	1.79	1.84	1.89	1.94
Toolmaker	2	2.06	2.11	2.17	2.23	2.29

"JUST LOST a good man, boss," Foreman Martin said. "Joe found out we were paying Bob a dime more for the same job."

A perfectly innocent situation. Joe had been with the company six years more than Bob and did equal or better work. The hitch was that in Bob's five years with the company he had asked for—and got—two raises. Joe hadn't.

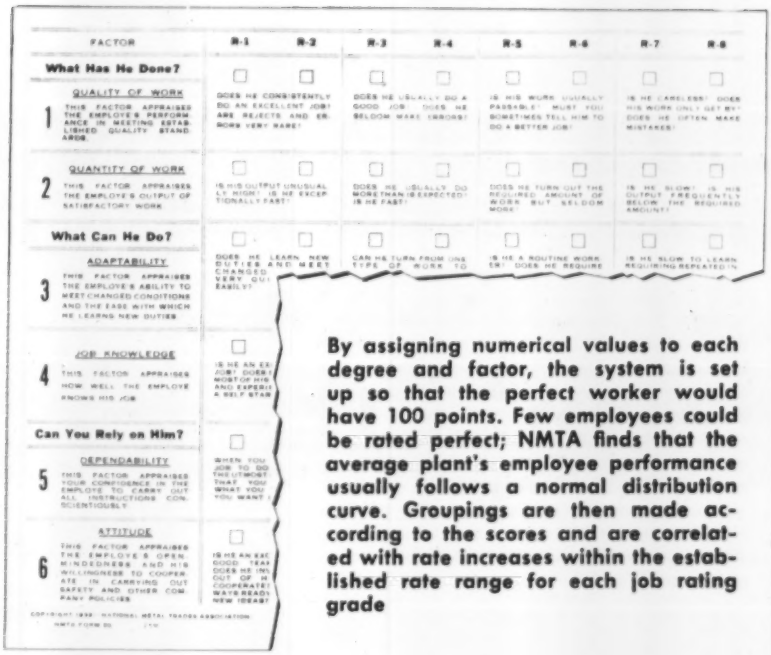
What It Is—Pay inequities are poor labor relations. Every employee likes to think he's getting a fair wage—and at least equal pay to his fellow worker for equal work. Job rating—a system of evaluating jobs without regard to individuals—and employee rating—evaluating ability and performance of employees on these jobs—could be the tool you're seeking to weed out pay inequities.

"Before we set up a program here at Electric Controller in the early 1940s, the relation of our rates to job values was erratic," says O. L. Gillen, personnel director of Electric Controller & Mfg. Co., Cleveland. "Also, there was a tendency to favor the employees whose pay raise demands were most persistent. We now have a systematic schedule."

Typical — Electric Controller adopted the job and employee rating plans of National Metal Trades Association. There are other plans, but NMTA's is typical of the necessary approach to the problem.

NMTA's employee rating plan uses six factors to rate employees: Quality of work, quantity of work, adaptability, job knowledge, dependability, attitude. Each factor is then broken down into eight degrees of performance (see list on page 61).

Job Factors—Job rating takes



FACTOR	R-1	R-2	R-3	R-4	R-5	R-6	R-7	R-8
What Has He Done?								
1 QUALITY OF WORK — THIS FACTOR APPRAISES THE EMPLOYEE'S PERFORMANCE IN MEETING ESTABLISHED QUALITY STANDARDS.	☐ DOES HE CONSISTENTLY DO AN EXCELLENT JOB? ARE REJECTS AND ER-RORS VERY RARE?	☐	☐ DOES HE USUALLY DO A GOOD JOB? DOES HE SELDOM MAKE ERRORS?	☐	☐ IS HIS WORK USUALLY PASSABLE? MUST YOU SOMETIMES TELL HIM TO DO A BETTER JOB?	☐	☐ IS HE CARELESS? DOES HIS WORK ONLY GET BY? DOES HE OFTEN MAKE MISTAKES?	☐
2 QUANTITY OF WORK — THIS FACTOR APPRAISES THE EMPLOYE'S OUTPUT OF SATISFACTORY WORK.	☐ IS HIS OUTPUT UNUSUALLY HIGH? IS HE EXCEPTIONALLY FAST?	☐	☐ DOES HE USUALLY DO MORE THAN IS EXPECTED? IS HE FAST?	☐	☐ DOES HE TURN OUT THE REQUIRED AMOUNT OF WORK, BUT SELDOM MORE?	☐	☐ IS HE SLOW? IS HIS OUTPUT FREQUENTLY BELOW THE REQUIRED AMOUNT?	☐
What Can He Do?								
3 ADAPTABILITY — THIS FACTOR APPRAISES THE EMPLOYE'S ABILITY TO MEET CHANGED CONDITIONS AND THE EASE WITH WHICH HE LEARNS NEW DUTIES.	☐ DOES HE LEARN NEW DUTIES AND MEET CHANGED CONDITIONS VERY QUICKLY AND EASILY?	☐	☐ CAN HE TURN FROM ONE TYPE OF WORK TO	☐	☐ IS HE A ROUTINE WORK-ER? DOES HE REQUIRE	☐	☐ IS HE SLOW TO LEARN REQUIRING REPEATED N-	☐
4 JOB KNOWLEDGE — THIS FACTOR APPRAISES HOW WELL THE EMPLOYE KNOWS HIS JOB.	☐ IS HE AN EX-JOB? DOES MOST OF HIS AND EXPERI-A HELP STAR							
Can You Rely on Him?								
5 DEPENDABILITY — THIS FACTOR APPRAISES YOUR CONFIDENCE IN THE EMPLOYE TO CARRY OUT ALL INSTRUCTIONS CONSCIENTIOUSLY.	☐ WHEN YOU JOB TO DO THE UTMOST THAT YOU WHAT YOU WANT							
6 ATTITUDE — THIS FACTOR APPRAISES THE EMPLOYE'S OPEN-MINDEDNESS AND HIS WILLINGNESS TO COOPERATE IN CARRYING OUT SAFETY AND OTHER COMPANY POLICIES.	☐ IS HE AN EXCEPTIONALLY GOOD TEAM? DOES HE INVITE OUT OF HIS COOPERATIVE WAY? READY NEW IDEAS?							

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By assigning numerical values to each degree and factor, the system is set up so that the perfect worker would have 100 points. Few employees could be rated perfect; NMTA finds that the average plant's employee performance usually follows a normal distribution curve. Groupings are then made according to the scores and are correlated with rate increases within the established rate range for each job rating grade

these factors into consideration: 1. Skill required—education, experience, initiative and ingenuity. 2. Effort required—physical demand, mental or visual demand. 3. Responsibility involved—for equipment or process, material or product, safety of others, work of others. 4. Job conditions—working conditions and hazards.

As with the employee rating plan, numerical values are assigned to each degree of each job rating factor so jobs can be measured accurately and consistently. The next step after completion of rating the jobs is to establish a wage structure for the various grades in which the jobs are classified. This is related to wages paid in your community for comparable jobs. This structure establishes a rate range for each grade which dovetails with the groupings in the employee rating plan.

The Result — Most companies agree that when a new program is installed, it'll cost you money at first. The reason: It's practically impossible to cut a man's wages if they happen to be above the new classification rate established. This, of course, only adds proof of the need for such a program. In the long run, the wage structure would become more equitable.

In general practice, companies rate employees at various periods—for example, some at three to six month intervals, others once a year. Each rating period does not necessarily mean a wage increase for each individual, but it gives the employees something to shoot at without having to wait for a general wage increase.

Another practice common with most companies is not to cut a man's wages if he falls into a lower classification in the rerating. For example, suppose he's a welder and his job has a rate spread of $1.58 to $1.80 in the classification. A number two rating has given him $1.75. On the rerating, for some reason, he gets a three rating which entitles him only to $1.69. His pay isn't cut, but he is informed of the fact, shown his weaknesses and encouraged to improve.

A Goal Is Set—One of the big values in rating programs is that the periodic rating gives the foreman a chance to talk briefly with every employee about his work. If his work is good and he's told so—along with getting a raise—there's no better morale builder for a worker. If his work is bad, he can be shown why so that he won't be under the impression that he's being discriminated against. And he has the knowledge that the goal is always there to reach.

Follansbee To Sell Assets

Two-way deal involves sale to New York group and merger with two Murchison-held firms

FOLLANSBEE STEEL CORP. has accepted a $9-million offer for its assets from a New York financial group and reached an agreement with the Murchison interests of Dallas, Tex., under which two Murchison-held firms will merge into the corporate shell of Follansbee.

These two transactions, if approved at a yet uncalled stockholders' meeting, would put Follansbee Steel out of the steel business. One of the Murchison-held firms, Consumers Co., Chicago, produces building materials, the other, Frontier Chemical Co., Wichita, Kans., and Denver City, Tex., produces industrial chemicals.

New Name—Follansbee, which is listed on the New York Stock Exchange, will be continuing under a new name, Mark A. Follansbee, president, said. He declared that on completion of the sale the present Follansbee Steel Corp. will have as its only asset approximately $9 million in cash or its equivalent, realized from the sale to the New York financial group.

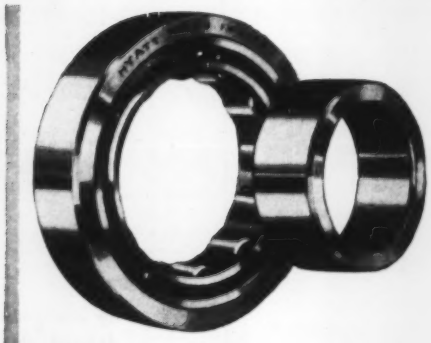
Frederick W. Richmond, who heads the group which will take over Follansbee's present assets, is chairman of the board of three companies, Baker Bros. Inc., machine tool maker of Toledo, O., Gear Grinding Machine Co., Detroit, and Brubaker Tool Corp., Millersburg, Pa.

Same Personnel—Under the sale of its properties and business to the Richmond interests, all of the operations of each of the Follansbee facilities will continue with present management and personnel, Mr. Follansbee said.

Follansbee Steel assets as of Dec. 31, 1953, amounted to a little over $16 million. This includes its 99.4-per-cent-owned subsidiary, Federal Enameling & Stamping Co., and its wholly owned subsidiary, Canton Stamping & Enameling Corp. Follansbee produces steel strip and sheet, metal stampings and other steel products.

The company reported a net loss of $229,724 in the quarter ended June 30.

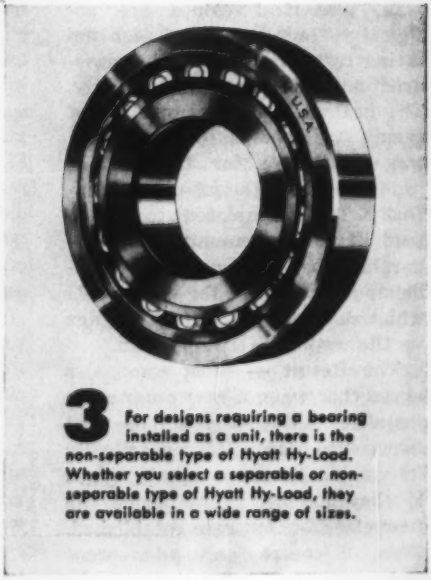
3 ways to handle your RADIAL LOAD PROBLEM



1 If your design requires a large shaft diameter to produce greater rigidity without disturbing boundary dimensions, a separable inner race type Hyatt Hy-Load bearing can be used with the inner race omitted. Rollers operate directly on a suitable hardened and ground shaft.

2 When the housing bore must be kept to a minimum, a Hyatt Hy-Load bearing with a separable outer race can be used—with the outer race omitted. The rollers then operate directly in a housing bore of suitable hardness and finish.

If your design applications involve radial loads, the best way to handle the job is with Hyatts—for Hyatt offers industry's most complete line of straight radial roller bearings! Hyatt Hy-Loads, for example, are made in three diameter series and two basic widths, to standard dimensions. There are ten major types—for the heaviest radial loads, and light or intermittent thrust loads. Four have separable inner races, two have separable outer races and four are non-separable, thus permitting wide flexibility in design and assembly procedures. Write for our general catalog No. 150—it will put the solution to any roller bearing problem at your fingertips. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



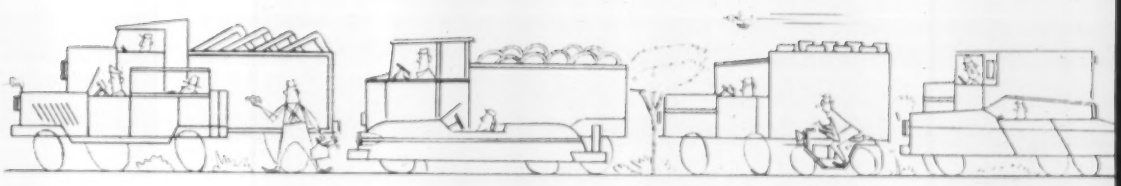
3 For designs requiring a bearing installed as a unit, there is the non-separable type of Hyatt Hy-Load. Whether you select a separable or non-separable type of Hyatt Hy-Load, they are available in a wide range of sizes.

HYATT

ROLLER BEARINGS

STRAIGHT ○ BARREL ○ TAPER ○

Auto Industry Headed for More West Coast Autonomy



LOS ANGELES

IT SEEMS reasonable to assume that if waitresses in Hollywood hope some day to become movie actresses, bus boys probably hope to become auto suppliers.

During 1953 General Motors Corp. spent $110 million in California for services and supplies, while Chrysler meted coastal sources $30 million. Nash, with local employment of only a little over 400 persons, dropped $1.5 million into the till, while Ford this year expects to spend $50 million to help keep California green.

Local Suppliers — Among parts and supplies now being purchased by automakers on the West Coast are suspension and seat springs, bumpers and bumper guards, tires and wheels, batteries, paint, tools, upholstery materials, solder and welding rods, body sealing materials, miscellaneous rubber parts such as grommets, small stampings and a myriad of nuts, bolts and screws. Chrysler numbers 1403 vendors, GM about 1300 and Ford scores high with 2000 West Coast suppliers. These vendors cater to an auto output of about 700,000 units in a good year.

Estimates of the postwar growth of the group vary from 10 to 25 per cent, but all agree the key to the growth is freight rates. The spatial shape of things provides the West Coast supplier with a built-in margin over his eastern competitor assuming all other things to be equal. The smog in the outlook lies in the fact that things are not always equal.

The Catch—Basic nub of the complex problem is the higher unit manufacturing cost a California supplier often faces. Volume is a usual necessity for amortizing the type of tooling required for efficiency. That's why major parts produced by the automakers themselves seem doomed to the abominable midwestern climate. Body stampings, engines, transmissions and the like can't be tooled elsewhere for the freight bills, though one source believes plastic tooling could change the picture in body sheet metal.

His Idea: A company investing in the necessary heavy presses now unavailable on the coast could run parts for several companies to get volume using plastic dies. The low cost of the dies, in turn, would make the move economically sound for the auto companies and beat freight rates they're paying now.

More Than a Dream—Although technological loopholes in the plastic panacea presently lead automakers to be sure '57 models on the drawing boards will nest as nice as they look, developments that appear to lie not far ahead could change the picture. One auto source figures in a few years you could find worse places to begin climbing the tax bracket ladder. The idea interests him because it's an extension of the already proven principle of supplying a little to many to get volume.

A parallel is provided by bumpers now purchased on the coast by most companies. Stampings produced from relatively less expensive dies, bumpers could be the forerunners of body panels themselves produced some day from less expensive dies of plastic. For although most companies get volume by producing common denominator parts of the tire and wheel variety, technological flexibility is a factor of increasing importance to auto suppliers everywhere.

The Opposite—Definitely moving in a diametrically opposed direction, however, are such products as engines and transmissions as equipment becomes more specialized, highly automated and consequently more expensive. But on the other hand, a boxcar full of engines or transmissions is a pretty valuable load of metal and the freight cost percentagewise is proportionately lower.

Many other auto parts now being shipped from the Midwest could be manufactured in Glamourland, however. One firm is reported to be

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moving ahead with plans for a plant to produce frames on the coast. Initial inquiry to automakers has indicated they'll go along with the project. In the same way, a radiatormaker, tired of shipping considerable quantities of air, is perhaps nearing the plunge into a West Coast branch.

Trend Started—It's no secret the auto companies are moving afield. *Automotive News* reports Michigan's share of U.S. auto production in the first six months of 1954 is 30.8 per cent, down from 35.8 per cent a year ago. And it's reported the decline is continuing. Just as location of assembly plants near the point of consumption is a growing thing in the auto industry (most recent example is the new B-O-P plant in Arlington, Tex.), automakers under the competitive lash save pennies that quickly mount into dollars on many products by buying close to the point of use. The outlook is for increased autonomy of suppliers just as the auto industry assembly plants are taking root in their localities.

But as of right now, east is east and west is west and the twain's what makes them meet.

Not Immediately Released

Auto company public relations people often serve a function similar to the guy sitting behind you at a ball game who shouts, "Wow, did you see that catch?" These men frequently are most prolific when nobody is catching anything, making it possible for crippled newsmen to write without leaving their mail boxes. To humor these boys, from whom blessings occasionally flow, here is a backlog of more or less important stuff that flowed through the mail slot during the past month.

Willys Motors Inc. announces the closure of its Maywood, Calif., plant on July 29. The plant eventually will be sold to consolidate operations in Ohio, according to the firm. Meanwhile Edgar Kaiser, president, denies anything but surplus facilities are being offered for sale, though rumors fly in the industry that the firm is preparing to pull out.

Oldsmobile's full cowl method of air intake is currently regarded by dealers as high on the list of wanted features, says J. F. Wolfram, general manager. Considering such factors as fresh air circulating the entire width of the passenger compartment, it seems unlikely a person would buy an Oldsmobile without one. Olds also set an all-time record for a ten-day sales period when dealers sold 15,976 new cars the last of July. The firm is now in fourth sales spot moving Plymouth to fifth, according to R. L. Polk & Co.

As predicted in this column a few months ago, the Hudson Italia is now in limited production. Selected dealers will receive the cars which will do crowd-pulling duty before going on the block. If this car handles as sweetly as it looks, your $5000-plus couldn't be spent on more pleasurable prestige.

AC Spark Plug Division of General Motors Corp. announces its rotary vacuum pump used this year on Cadillacs will be used by other makes in 1955. A vane-type positive displacement pump resembling an eccentric vane supercharger in miniature, the unit runs whenever the engine runs providing smooth wiper motor operation under engine load.

Dodge Division of Chrysler Corp. announces a new 145-hp Power-Dome V-8 truck engine for Dodge pick-ups, panels and low-tonnage stakes. The engine is also optional in half-ton, ¾-ton and 1-ton trucks. Among interesting features is the use of a new chrome-alloy cylinder head which eliminates the need for valve guides and valve seat inserts. This engine sounds so good we'd like to suggest Plymouth use it in 1955 models.

GMC Truck & Coach Division of General Motors Corp. introduces a "dramatic 'Stripaway' system" for cab-over-engine trucks which allows a mechanic to lay bare every important, above-frame part of the engine in 31 seconds. Ideally suited for eager-beavers or mechanics on piece-work, the unit is now standard on COE models of five tons and up. The firm reports the percentage of COE jobs among trucks over two and one-half tons sold yearly has tripled since 1948.

Buick sends the exciting news that Arctic White is the most popular color in its line this year with Condor Yellow running second. Black has dropped to fifth place nationally with third place going to Willow Green and Malibu Blue as fourth choice. To horribly paraphrase Henry Ford speaking of the Model T, "Any color so long as it's Buick."

A new Ford Division general office building will be built at the Corner of Southfield Road and Rotunda Drive in Dearborn, Mich., starting next spring. Two to three days lead time has been cut off delivery schedules to sales districts under a new system placed in operation by the division. A new factory delivery facility placed in operation at the end of June resumes factory delivery of Fords for the first time since the end of the war. West Coasters who wish to combine vacations with picking up a new car are already keeping the unit mighty busy.

The National Automobile Dealer's Association reports new car and truck dealers this year realized an average operating profit of 1.9 per cent of sales before taxes compared to 4.4 per cent during the comparable first six months of 1953. The association cites striving for volume without profit as a "dangerous mistake for any dealer to make." Words on how to bell the cat will probably be forthcoming shortly.

Auto, Truck Output

U. S. and Canada

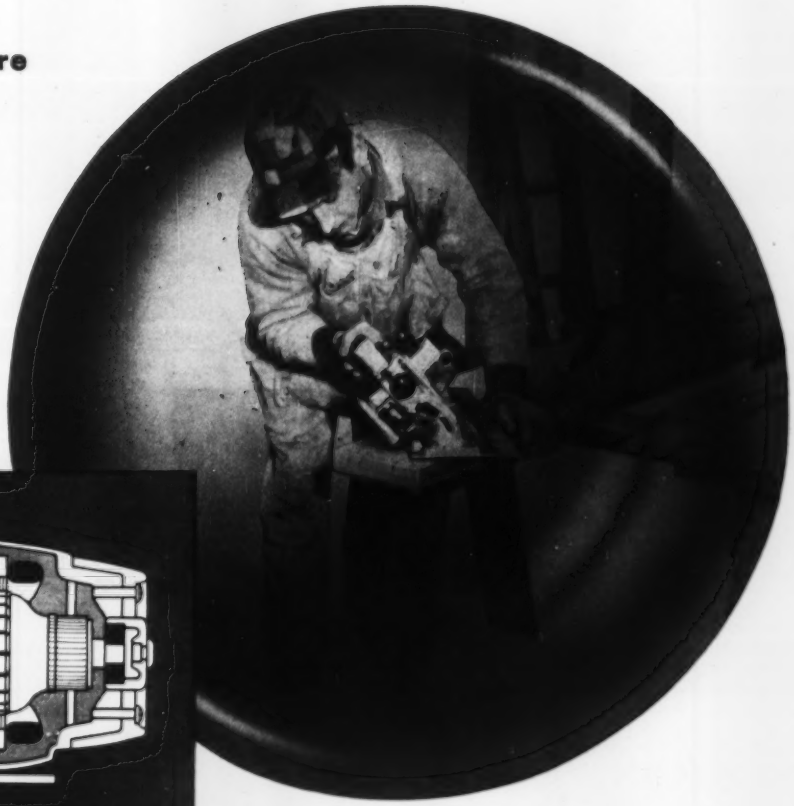
	1954	1953
January	594,789	614,000
February	573,801	628,017
March	672,485	752,149
April	676,233	782,491
May	621,249	684,843
June	623,732	713,778
July	543,797†	757,595
August		641,152
September		605,228
October		651,153
November		457,852
December		529,588
Total		7,817,846

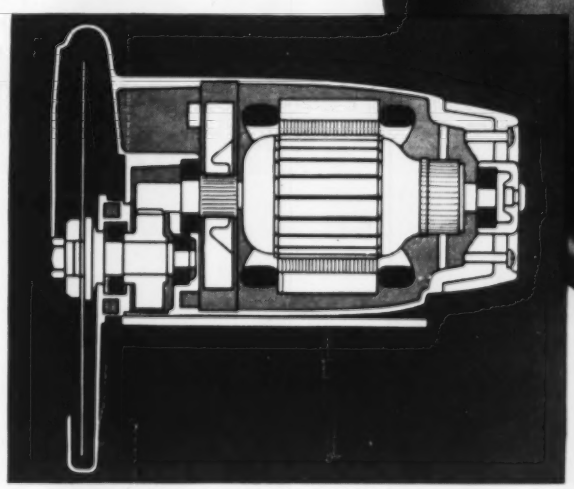
Week Ended	1954	1953
July 17	130,763	175,599
July 24	129,582	172,874
July 31	130,917	168,267
Aug. 7	124,168	137,671
Aug. 14	118,604	156,526
Aug. 21	108,000*	163,635

Source: Ward's Automotive Reports. †Preliminary. *Estimated by STEEL.

BUILDING BOON!

New Departures assure smooth, high-speed operation for Porter-Cable tools!





Four New Departure **ball** bearings in Porter-Cable's No. 115 saw contribute importantly to its dependable, trouble-free operation.

Long hours of heavy work without letup! New Departure precision **ball** bearings help keep Porter-Cable's No. 115 saw on the job. These bearings preserve alignment of moving parts under all conditions . . . require almost no upkeep . . . assure smooth, clean cutting and a cool-running motor for hours on end.

New Departure **ball** bearings bring advantages like these to hundreds of machines and appliances. Whether improving a product or designing a new one, *talk with your New Departure engineer.* He'll help you get maximum efficiency and economy in bearings.

NOTHING ROLLS LIKE A BALL

NEW DEPARTURE

BALL BEARINGS

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In Canada: McKinnon Industries, Ltd., St. Catharines, Ontario

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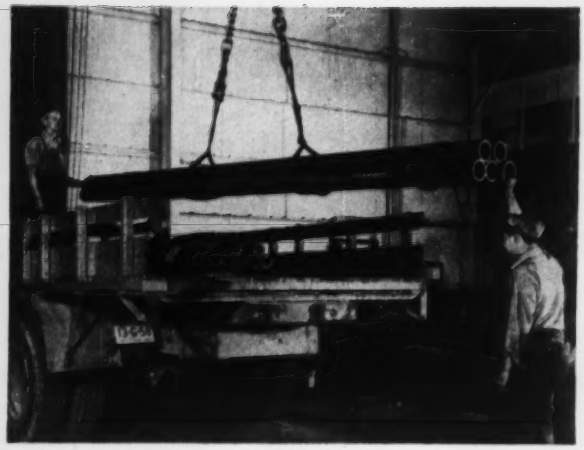
BRISTOL	269 North Main St.	2-6371	**DETROIT**	7-122 General Motors Bldg.	Trinity 2-4700	**KANSAS CITY**	1021 E. Linwood Blvd.	Valentine 4939
BOSTON	517-A Park Square Bldg.	Hancock 6-9867	**CINCINNATI**	2107 Carew Tower	Main 5783	**MILWAUKEE**	647 W. Virginia St.	Broadway 6-9460
KANNAPOLIS, N. C.	P. O. Box 1086	2-3181	**CLEVELAND**	3113 W. 110th St.	Winston 1-5454	**ST. LOUIS**	3001 Washington Blvd.	Franklin 6533
NEW YORK	1775 Broadway	Circle 6-1540	**INDIANAPOLIS**	1357 W. 18th St.	Imperial 4680	**LOS ANGELES**	5035 Gifford Ave.	Logan 8-2301
PHILADELPHIA	850 E. Luzerne St.	Garfield 3-4136	**PITTSBURGH**	Cathedral Mansions	Mayflower 1-8100	**BERKELEY**	1716 Fourth St.	Landscape 6-8750
SYRACUSE	2360 James St.	73-5195	**CHICAGO**	332 So. Mich. Ave.	Wabash 2-5875	**SEATTLE**	5000 First Ave., S.	Lander 5920
			DAVENPORT	2212 E. 12th St.	Davenport 7-7522			

PROBLEM:
Need 52100 tubing for rush hollow parts job



SOLUTION:
Order today —we'll ship tomorrow

WHEN the problem is a rush hollow parts job, phone or wire the Timken Company and we'll ship less-than-mill quantities of 52100 tubing within 24 hours after receiving your order.

Timken® 52100 steel will do most of your hollow parts jobs. It can often be used in place of more expensive steels. It can be heat treated to file hardness and tempered back to any desired point. It's a high carbon steel, is through-hardening in moderate sections, has high wear resistance. And it comes in sizes from 1″ to 10½″ O.D.

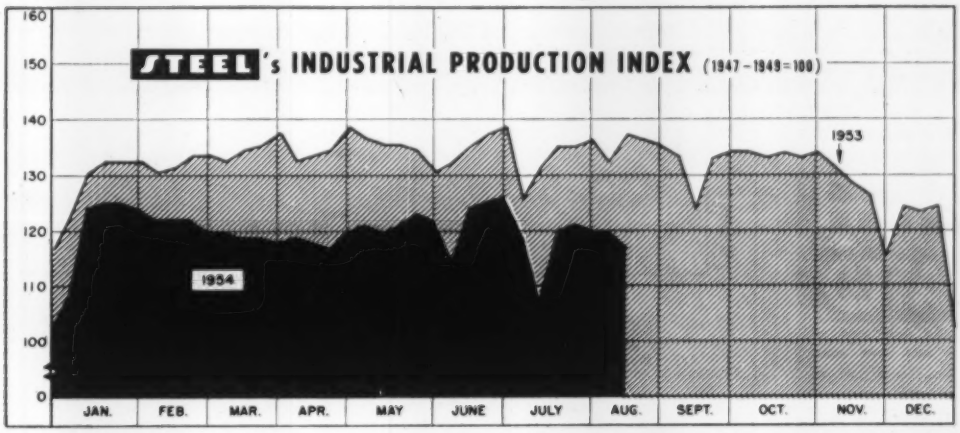
Timken 52100 steel is especially suited for hollow parts jobs such as aircraft parts, ball bearing races, pump parts and plungers, collets, bushings, spindles, grinding machine parts and precision instrument parts.

As America's pioneer producer of 52100 tubing, the Timken Company has a backlog of experience that can't be topped. Result: you get uniform high quality from tube to tube and order to order.

For immediate delivery of your less-than-mill quantity orders, write, wire or call The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD — THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



LATEST WEEK*	118
PREVIOUS WEEK	119
MONTH AGO	120
YEAR AGO	138

* Week ended Aug. 14.

Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 11%.

Economic Shock Absorbers Cushion Recession Bumps

END OF RECESSION—when is it due? That question is about as passe as a last New Year's hangover, but it's still giving some people headaches.

Some good clues to an answer are found in a statistical study of the Gross National Product, worked up by the Federal Reserve Bank of Cleveland.

Shock Absorbers — The bank says, "There are solid grounds for satisfaction in the way the nation's economy has responded to the defense cutbacks following the Korean War . . . the adjustment has not been painless; important problems still lie ahead . . . But the statistical record fortifies a general impression that the economy's shock absorbers have been in good working order." Let's take a look at the shocks and the absorbers.

From second quarter, 1953, to second quarter, 1954, GNP slid from an annual rate of $369.9 billion to a rate of $355.5 billion, according to the Commerce department. This decline breaks down into a drop of $9.8 billion in federal spending, $3.9 billion in producer and consumer durable goods and $9.6-billion change in inventories.

Safety Valves—But at the same time, other parts of GNP were going up. Gains in consumer outlays for nondurables and services, state and local government purchases, net foreign investments and new construction added up to about $8.9 billion. This left a net drop in GNP of $14.4 billion.

Now for some of the pointers toward an upturn. For one thing, most of the drop in GNP occurred in late 1953; it has held steady at an annual rate of $355.5 billion through the first two quarters of 1954. The usual summer slowdown may cause a small over-all drop in third quarter, but it should

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,481	1,525	2,162
Electric Power Distributed (million kwhr)	8,895[1]	9,059	8,514
Bitum. Coal Output (daily av.—1000 tons)	1,234	1,250	1,560
Petroleum Production (daily av.—1000 bbl)	6,175[1]	6,153	6,595
Construction Volume (ENR—millions)	$419.2	$368.6	$326.5
Automobile, Truck Output (Ward's—units)	118,604	124,168	156,526
TRADE			
Freight Car Loadings (unit—1000 cars)	665[1]	668	807
Business Failures (Dun & Bradstreet, no.)	198[1]	207	150
Currency in Circulation (millions)[3]	$29,911	$29,893	$30,158
Dept. Store Sales (changes from year ago)[3]	0%	+1%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$18,050	$19,213	$15,546
Federal Gross Debt (billions)	$274.7	$274.6	$272.7
Bond Volume, NYSE (millions)	$17.6	$20.0	$11.6
Stocks Sales, NYSE (thousands of shares)	13,805	15,943	5,058
Loans and Investments (billions)[4]	$83.5	$81.4	$79.9
U. S. Gov't. Obligations Held (billions)[4]	$36.6	$34.2	$32.5
PRICES			
STEEL's Finished Steel Price Index[5]	194.19	194.19	189.38
STEEL's Nonferrous Metal Price Index[6]	215.1	215.6	205.2
All Commodities[7]	110.2	110.1	110.5
Commodities Other Than Farm & Foods[7]	114.3	114.4	114.8

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1954, 2,384,549. 1953, 2,254,459. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

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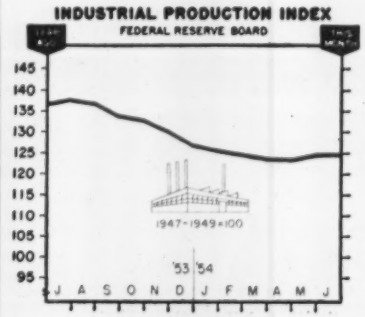
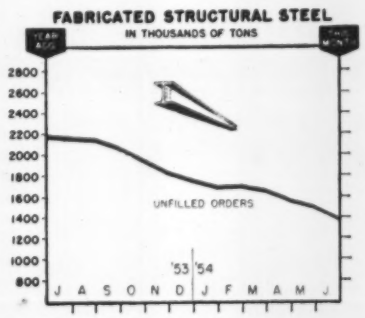
THE BUSINESS TREND





(seasonally adjusted)

	Total Production		Primary Metals		Metal Fabricating	
	1954	1953	1954	1953	1954	1953
Jan.	125	134	111	135	155	168
Feb.	124	134	108	137	152	168
Mar.	123	135	103	136	148	168
Apr.	123	136	104	136	146	169
May	124	137	106	139	147	169
June	124*	136	109	137	146	168
July	...	137	...	136	...	171
Aug.	...	136	...	137	...	171
Sept.	...	133	...	130	...	166
Oct.	...	132	...	128	...	165
Nov.	...	129	...	122	...	159
Dec.	...	126	...	113	...	156
Avg.	...	134	...	132	...	167

Federal Reserve Board. *Preliminary.

	Shipments		Backlogs	
	1954	1953	1954	1953
Jan.	245.6	241.4	1,686	2,180
Feb.	253.1	251.1	1,697	2,128
Mar.	285.4	266.3	1,645	2,155
Apr.	293.5	263.2	1,566	2,168
May	254.1	263.8	1,490	2,179
June	290.3	274.6	1,391	2,153
July	...	230.3	....	2,134
Aug.	...	251.1	....	2,122
Sept.	...	255.6	....	2,041
Oct.	...	295.5	....	1,927
Nov.	...	257.8	....	1,804
Dec.	...	266.9	....	1,741
Total	....	3,117.6		

American Institute of Steel Construction.

Charts Copyright 1954 STEEL.

hit a high for the year in last quarter.

Signals—Some reasons for this: The worst of the inventory adjustment is about over, and production will be going up to keep pace with sales instead of lagging behind as it has been. The worst slashes in federal spending are over. In fact, some increase in defense orders have already been noted, and signs point to a substantial increase soon. Consumer durables have picked up. In spite of slow auto sales in July, the overall picture is improved. The big upswing should come when new models go on sale in the fourth quarter.

The Cleveland bank itself predicts a continuing rise in state and local government spending, calling it "significant," though small in relation to the total GNP.

Nondurable goods and services is the largest segment of the GNP, and it's getting bigger. It was 54.2 per cent of the total in second quarter, 1953, rose to 57.2 per cent in second quarter, 1954. Services accounted for almost all of the gain. Tax cuts acted as a stimulus, and a further rise is much more likely than any dip.

Abuilding We Will Go . . .

Construction, one of the sustainers of the economy, is continuing to bounce upward after skidding a couple of weeks ago. August is already being touted as second-highest month on record for contract awards.

For the week ended Aug. 12, awards hit $419 million, third largest week this year, according to *Engineering News-Record*. A $160-million gas pipeline contract caused the big jump.

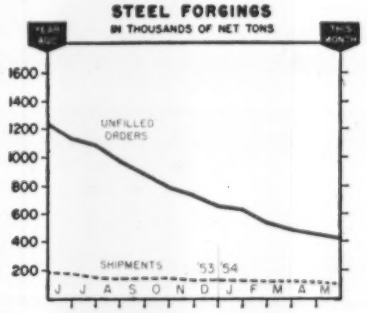
The biggest week of the year for highways, growing state and local public works and private construction helped make up for slipping federal awards. Total awards so far in 1954 are only 7 per cent below this time last year.

TV Sets a Record . . .

Latest reports of Radio-Electronics-Television Mfrs. Association show that industry is holding up its end of consumer durable goods sales. Retail TV sales for first half, 1954, were at a record high of 2,805,760, and the big TV buying season should be still ahead.

First-half sales of radios were

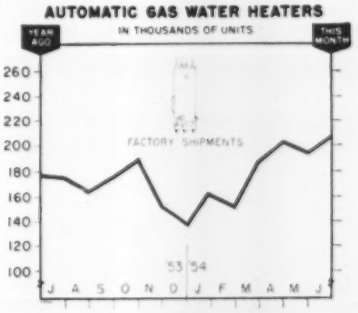
STEEL FORGINGS
IN THOUSANDS OF NET TONS



	Shipments		Unfilled Orders	
	1954	1953	1954	1953
Jan.	139	184	638	1,207
Feb.	127	184	539	1,199
Mar.	130	200	489	1,197
Apr.	116	196	460	1,082
May	107	191	431	1,239
June	...	185	...	1,135
July	...	155	...	1,081
Aug.	...	151	...	974
Sept.	...	153	...	882
Oct.	...	156	...	798
Nov.	...	143	...	740
Dec.	...	143	...	651

U. S. Bureau of the Census. Data based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more.

AUTOMATIC GAS WATER HEATERS
IN THOUSANDS OF UNITS



	Shipments—Units		
	1954	1953	1952
Jan.	164,400	184,000	148,700
Feb.	175,000	188,500	145,800
Mar.	187,800	203,000	153,300
Apr.	200,800	204,400	153,300
May	195,600	179,000	155,300
June	208,400*	175,800	159,000
July	.....	173,800	131,300
Aug.	.....	163,000	161,500
Sept.	.....	175,300	171,200
Oct.	.....	189,200	185,300
Nov.	.....	151,900	167,100
Dec.	.....	137,800	178,600
Total	.....	2,125,700	1,910,400

Gas Appliance Mfrs. Assn.
*Preliminary

off from a year ago, but the June total of 537,494 was the highest of any month this year. In addition to sets sold at retail, 2,080,893 car radios were produced for auto manufacturers in first half.

End of a Race . . .

Of late, though, there have been fewer cars for those radios to go into. Auto output has been falling since June as manufacturers cut production to keep dealer stocks down.

New car sales in July dipped 20 per cent under June, but low production has allowed dealers to continue reducing inventories. With drastic changes forecast for most makes, there is little likelihood of any big pickup in either sales or production until new models come out.

Limping Along . . .

Another branch of the transportation industry is also in the doldrums. Railroad freight car loadings for revenue have been falling off for about a month—and they weren't too high to start with. Reflecting lowered steel output, ore, coke and coal accounted for much of the latest week's decline. On an average, weekly carloadings are about 100,000 under a year ago.

Problem of Replacement . . .

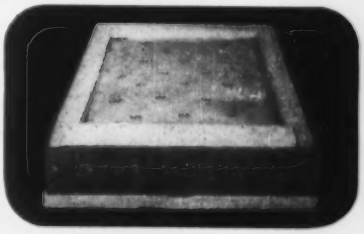
In the air, the situation is different with the shortage being of men rather than cargo. Aircraft Industries Association warns that a serious manpower shortage threatens the effectiveness of the nation's airpower. This year the Air Force must find replacements for 200,000 trained men. That high turnover of personnel is costing taxpayers more than $2 billion a year, the association said.

Trends Fore and Aft . . .

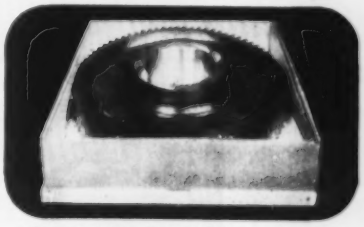
Electric output continues high—over 9 billion kilowattt-hours weekly for almost a month . . . Federal contracts are showing up for aircraft, combat vehicles and shipbuilding . . . Department sales nationally are running only 3 per cent behind last year . . . Business failures have been dropping slowly but steadily from first-quarter highs, another indication of a leveling off in business . . . Loans to business by leading New York banks rose $1 million in the week ended Aug. 11, the first gain in 8 weeks.

HOW MARVELLUM vpi® WRAP Speeds Assembly of Diesel-Electric Locomotives

Part arrives at assembly plant in steel-strapped skidded carton ready for stand-by storage.



Removal of carton top reveals rust-preventive VPI cover sheet held in place by top blocking.

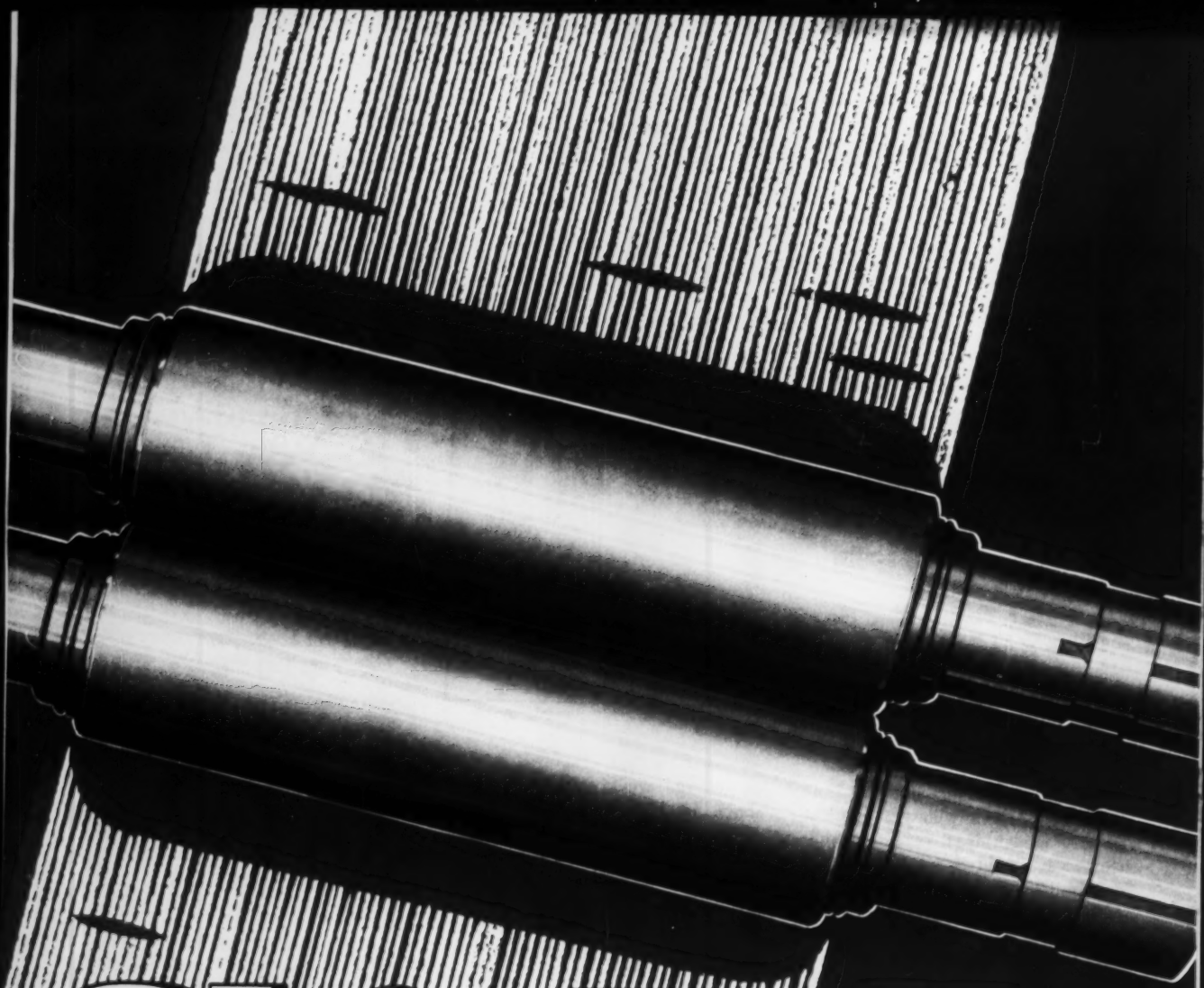


Gear, on bottom sheet of VPI paper, is clean, bright and ready for immediate installation. No messy, time-consuming degreasing delays the assembly of General Electric diesel-electric locomotives.

In shipment and storage, Marvellum VPI Wrap positively protects parts against rust. A special coating on the paper vaporizes and forms an invisible protective film around the item packed, preventing corrosion. Wherever prevention of rust is a factor, you can save time and money with VPI. To get all the facts about this revolutionary protective wrap, write for our fully descriptive booklet and generous VPI sample. Our technicians will be glad to discuss corrosion problems peculiar to your plant.

Marvellum VPI Wrap is made in compliance with Military Packaging Specification MIL-P-3420.

The MARVELLUM COMPANY
1 Appleton St., Holyoke, Mass.



Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

CARBON STEEL ROLLS • OHIOLOY ROLLS • OHIOLOY "K" ROLLS
HOLL-O-CAST ROLLS • CHILLED IRON ROLLS • DENSO
IRON ROLLS • NICKLE GRAIN ROLLS • SPECIAL IRON ROLLS
NIOLOY ROLLS • FLINTUFF ROLLS • OHIO DOUBLE-POUR ROLLS

THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • Plants at Lima and Springfield, Ohio

GAVIN A. CULLEN
. . . general manager of IBM plant

CHARLES T. EVERETT
. . . Beaver Pipe Tools v. p. and gen. mgr.

L. JACK CLARKE
. . . Leschen Wire Rope gen. mgr.—Sales

Gavin A. Cullen was appointed general manager of **International Business Machines Corp.'s** new plant for defense production now being built in Kingston, N. Y. Mr. Cullen joined IBM in 1932 and most recently was production manager at the Endicott, N. Y., plant.

Fred M. Stefan was named vice president, **Swedlow Plastics Co.**, Youngstown. He will continue also as general manager of the Youngstown division. **John Endicott,** former vice president-operations, was appointed executive vice president in charge of the Los Angeles division. **Paul Bottoms,** former secretary, was advanced to vice president and **William Fisher** was named secretary. **Frank Bond** was appointed production manager, Youngstown division.

Colman Curtiss Jr. joined **S. M. Jones Co.**, Toledo, O., a division of Buffalo-Eclipse Corp., as a vice president, succeeding the late **Frank S. Oatman.** Mr. Curtiss was formerly with the Buffalo Bolt division of Buffalo-Eclipse Corp.

George Tischer was appointed general sales manager, **McLouth Steel Corp.**, Detroit. He succeeds **C. E. Riley,** who becomes vice president special products sales. **William J. Cleary Jr.,** was named assistant general sales manager and **W. A. Adamson,** manager of stainless sales.

Charles T. Everett was appointed executive vice president and general manager, **Beaver Pipe Tools Inc.**, Warren, O. He was formerly vice president and general manager with the aviation division of Bingham-Herbrand Co.

Aluminum Co. of America promoted **Richard R. Senz** to chief metallurgist at the Buffalo works. He was formerly staff metallurgist at Alcoa's Cleveland works.

P. L. Dafoe, on leave from his responsibilities as vice president and general sales manager of **Acme Steel Co.'s** products division, will head the firm's new Dexion division, Chicago. **Lewis R. Miller** was named assistant manager of the new division.

Kenneth N. Scott was named manager of **General Motors Corp.'s** Buick-Oldsmobile-Pontiac plant in Arlington, Tex. He succeeds **Edwin C. Klotzburger,** who was transferred to the Fisher Body Division as special assistant to the general manager on special assignments. **Milford L. Rodgers,** general superintendent of the Wilmington B-O-P plant, succeeds Mr. Scott as production manager at that plant.

S. F. Davies was named sales manager and **C. B. Leape** was made engineering manager of the Micarta division, **Westinghouse Electric Corp.**, Trafford, Pa.

L. Jack Clarke was named general sales manager, **Leschen Wire Rope Division,** H. K. Porter Co., St. Louis.

Charles E. Carr was appointed general superintendent, **Weirton Steel Co.**, Weirton, W. Va., a subsidiary of National Steel Corp. **W. D. Spaulding** was named manager of the steel works; **R. W. Grace** has advanced to assistant manager of the steel works; and **A. R. Benbow** succeeds Mr. Grace as superintendent of the blooming mills. Two Weirton executives have been promoted and transferred to National Steel Corp.'s Detroit subsidiary, **Great Lakes Steel Corp. R. B. Allard** was made manager of Great Lakes steel works and **W. F. McGarrity** was transferred to the Great Lakes sales department.

Charles E. Schell was named assistant to the plant manager, **John Volkert Metal Stampings Inc.**, Queens Village, N. Y. He formerly served as plant manager of Sylvania Electric Products Inc., parts division.

American Steel & Wire Division, U. S. Steel Corp., promoted **John P. Debri** to a position in charge of special duties in the office of district manager of operations, Chicago. **Joseph J. Just** replaces Mr. Debri as general superintendent of the Joliet works and **Jacob W. Cox,** former division superintendent,

GEORGE W. BROWN
. . . Wagner Electric Corp. vice president

FREDERICK W. SMITH
. . . Penn Machine production superintendent

blast furnaces, succeeds Mr. Just as assistant general superintendent at the division's Donora, Pa., steel and wire plant.

George W. Brown, executive engineer of **Wagner Electric Corp.,** St. Louis, was elected a vice president of the company. In his new capacity he will have complete charge of the engineering and research divisions and will also serve as a member of the company's executive committee.

Hudson Motor Car, Detroit, a division of American Motors Corp., appointed **Herbert C. Levis** merchandising manager. For the past four years he served as Hudson's national used car manager.

Edwin H. Engel joined **Follansbee Steel Corp.,** Pittsburgh, as chief of quality control. He will make his headquarters in Follansbee, W. Va. Mr. Engel was formerly chief metallurgical engineer and assistant to the general superintendent of Compania de Acero del Pacifico in Chile. **Ralph M. Keenan** was appointed sales representative for Follansbee Steel Corp.'s division, Follansbee Metals, Pittsburgh.

Henry W. Koester, service representative for **Giddings & Lewis Machine Tool Co.,** Fond du Lac, Wis., was transferred to Los Angeles.

Carl A. Claus was appointed manager of Eastern sales for **R. A. Jones & Co. Inc.,** Summit, N. J.

Frederick W. Smith joined **Penn Machine Co.,** Johnstown, Pa., as superintendent of production. Mr. Smith was formerly supervisor of steel fabricating, transportation and generator division, Westinghouse Electric Corp.

Ray J. Dervey was appointed general sales manager of **American Hoist & Derrick Co.,** St. Paul. Since 1946 he has served as district manager of the Pittsburgh office and territory.

Allan M. Cameron was named general manager of a new research and development department in the metal division of **Continental Can Co.,** Chicago. Mr. Cameron's department will conduct all research and development activities of the company's metal container business.

Harry R. Hemmings was appointed to the newly created position of manager of manufacturing for **General Electric Co.'s** cathode ray tube subdepartment, Syracuse, N. Y. He will be succeeded as plant manager of GE's Buffalo picture tube plant by **Willard L. Male.**

Oliver Iron & Steel Corp., Pittsburgh, appointed **David H. W. Fisher** plant manager of the Oliver division. He is former assistant to vice president-operations.

Robert J. Cole joined **John A. Roebling's Sons Corp.,** Trenton, N. J., a subsidiary of Colorado Fuel & Iron Corp., as Pacific Coast manager of the construction materials division with headquarters in San Francisco. **Edwin F. Whitehill** was named Cleveland district manager for the firm's wire and cold-rolled products division.

Alfred A. Diebold is the new vice president in charge of sales, **Atlas Steel Casting Co.,** Buffalo. He succeeds **Arthur J. Westphal** who died May 11. Mr. Diebold also continues as vice president in charge of operations.

William R. Murdock was appointed commercial sales manager, **Trion Inc.,** McKees Rocks, Pa.

I-T-E Circuit Breaker Co., Philadelphia, appointed **Jerome Corwin** to the engineering staff of the special products division. He will head the new design and development section on electro-mechanical devices, servo mechanisms and computers.

Allegheny Ludlum Steel Corp., appointed **Marlin R. Hemphill** general manager in charge of its Carmet Division, Ferndale, Mich. He was formerly assistant plant manager of the firm's forging and casting division.

Femco Inc., Irwin, Pa., appointed **Raymond G. Kelley** as sales engineer for Michigan, Minnesota and Wisconsin with headquarters in Wakefield, Mich. **Jack Helton** was named sales engineer in West Virginia and the Carolinas with headquarters in Bluefield, Va.

Four vice presidents were elected by **Bell & Gosset Co.,** Morton Grove, Ill. They are **W. A. Boone,** who was also named assistant treasurer; **H. A. Lockhart,** chief engineer; **R. A. Marquardt,** controller and assistant secretary; and **C. R. Smith,** former personnel director, who will be in charge of industrial relations.

E. A. Domin was appointed manager of a newly created Milwaukee branch office of **Zagar Tool Inc.,** Cleveland.

F. C. Tucker was named to the newly created position of manager, eastern sales, plastics department, **General Electric Co.,** Taunton, Mass. Mr. Tucker will be responsible for sale of the department's

It gets its fuel through 1/4" tubing at pressures up to 1,700 psi

Meet the "Boss of the Crawlers"—Caterpillar Tractor Co.'s new 150 D.B. hp giant that toys with tons of earth, plays marbles with huge boulders, topples trees like tenpins.

Superior Tube supplies metal gullets through which such landscape levelers gulp their fuel.

Through ¼ inch O.D. tubing, diesel fuel is injected to cylinders at pressures up to 1,700 psi. So fuel injection tubing must be clean, have tremendous burst strength and resistance to fatigue. To meet Caterpillar's stringent specifications, Superior selects C-1008 Low Carbon Steel Tubing, draws it to size 250/255" O.D. x 0575/0675" I.D., then tests its mechanical properties to the utmost.

Result: heavy wall tubing with Rockwell hardness of B-65 maximum—capable of being cold upset without difficulty and cold formed into loops and bends without excessive springback. Bore is of uniform diameter, smooth and specially cleaned, and fracture testing and inspection at 15 power magnification assure freedom from cracks or seams of a depth greater than 5/1000 of an inch!

Scrupulous care in preparing, drawing and testing other grades of alloy and stainless Superior tubing makes them first choice for lubricating and cooling lines, governor shafts, valve spacers and valve push rods. One of our more than 55 analyses should be *your* choice, too, if you need trustworthy tubing and special help in adapting it to your use. Write us about your current tubing problem. We'll send you complete information and the appropriate catalog or technical bulletin by return mail. Superior Tube Company, 2005 Germantown Ave., Norristown, Pa.

Round and Shaped Tubing Available in Carbon, Alloy and Stainless Steels; Nickel and Nickel Alloys; Beryllium Copper; Titanium; Zirconium.

All analyses .010" to ¾" O.D. Certain analyses in light walls up to 2½" O.D.

Superior Tube

The big name in small tubing

West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif. RAymond 3-1331

W. E. THOMAS
. . . Magnaflux executive v. p.

C. J. CHAPMAN
. . . gen. sales mgr. of National Carbon

DONALD A. COMES
. . . vice president of Farrel-Birmingham

line of custom-molded plastics products for the refrigeration, electronics, electrical and other industries.

Magnaflux Corp., Chicago, announces changes in the company's executive positions. **W. E. Thomas** was elected executive vice president. **F. B. Doane** was made chairman in addition to his present duties as president. **Carl E. Betz** is the new vice chairman of the board and **Wylie D. Reid Jr.** was named treasurer, in addition to his duties as second vice president and plant manager.

W. V. Thelander, chief engineer of the clutch division, **Dana Corp.**, Toledo, O., was named sales manager of clutches and farm equipment.

George H. L. Norman joined the **Sprague Electric Co.**, North Adams, Mass., as co-ordinator of the company's activities in the field of electronic computer components. He was formerly general sales manager, new products division, Corning Glass Works.

National Carbon Co., New York, a division of Union Carbide & Carbon Corp., appointed **C. J. Chapman** general sales manager, industrial products. He was formerly Chicago district sales manager.

Rockwell Mfg. Co., Pittsburgh, promoted two men to key posts in two newly established central research and development departments. **Howard J. Evans**, former chief engineer, Pittsburgh Equitable Meter Division, was promoted to chief engineer and manager of the central gas products research and development department. **H. A. Altorfer**, former chief engineer, Nordstrom Valve Division, was named chief engineer and manager of the central valve research and development department.

James F. Niblick was made secretary-treasurer and controller of the spring division, **Borg-Warner Corp.**, Chicago.

W. Dee Shepherd was named sales manager of **Westinghouse Electric Corp.'s** atomic power division, Cheswich, Pa.

Donald A. Comes was elected vice president, **Farrel-Birmingham Co. Inc.**, Ansonia, Conn. He joined this company in 1922 and since 1953 has served as general sales manager.

John V. Boardman joined **Green River Steel Corp.**, Owensboro, Ky., as general superintendent. He formerly served as works manager of Worth Steel Co.

Le Roi Co., Milwaukee, a subsidiary of Westinghouse Air Brake Co., appointed **James R. Harwood** sales manager of the Transo Division. He joined Le Roi Co. in 1950 and recently was a sales engineer of Transo Division.

B. F. McNamee will head the research and development of motor controls and power supplies for **Dressen-Barnes Corp.**, Pasadena, Calif.

Richard T. Coyne, former vice president of Pressed Steel Car Co., joined **National Motor Bearing Co. Inc.**, Chicago, as assistant to the president.

OBITUARIES . . .

Herbert S. Graver Sr., 74, product manager, bulk and underground division, **Graver Tank & Mfg. Co.**, East Chicago, Ind., died Aug. 6.

William B. Gregg, 60, president, **Gregg Co. Ltd.**, Hackensack, N. J., died Aug. 6.

Fred J. Blessi, 69, owner, **Dayton Specialty Machine Co.**, Dayton, O., died Aug. 4.

Merle J. Trees, 71, chairman, **Chicago Bridge & Iron Co.**, Chicago, died Aug. 6.

James J. Donoghue, 64, retired sales manager, **National Radiator Corp.**, New York, died Aug. 8 in Jersey City, N. J.

Raymond K. Albright, 78, board chairman, **Buffalo Eclipse Corp.**, Buffalo, died Aug. 5.

E. Harold Parker, 60, manager, wire rope division, **Upson-Walton Co.**, Cleveland, died Aug. 8.

'round the clock with WICKWIRE WIRE

Let's take a look at a typical day in the life of John Q. Citizen—and of the part Wickwire Wire plays in his every-day activities.

bedroom —7:00 a.m.

John's day starts with the ringing of his alarm clock. Just a quick look around his bedroom reveals a few of the many places where wire, all of it made by Wickwire, is used. There's wire in the bed springs. Bobby pins, safety and common pins in his wife's dressing table. Wire in the lampshades and in the drapery hooks, too. Not to mention the wire that holds the pictures on the wall.

nursery —7:15 a.m.

Here's the crib from which young John helps the alarm clock in rousing his dad. No less than nine different kinds of wire, all made by Wickwire, go into its making. His toys and his tricycle—even the zippers on his clothes make use of Wickwire Wire.

kitchen —7:30 a.m.

Before John's wife comes down to make the family breakfast—let's inspect the kitchen. In the range and the refrigerator there are wire racks. The kitchen utensils, wire strainers, electric mixer, the egg slicer, the toaster, and dozens of other kitchen appliances all use Wickwire Wire in their construction.

REMEMBER—whatever *your* product may be, if it utilizes wire, you can count on Wickwire to meet your most exacting specifications.

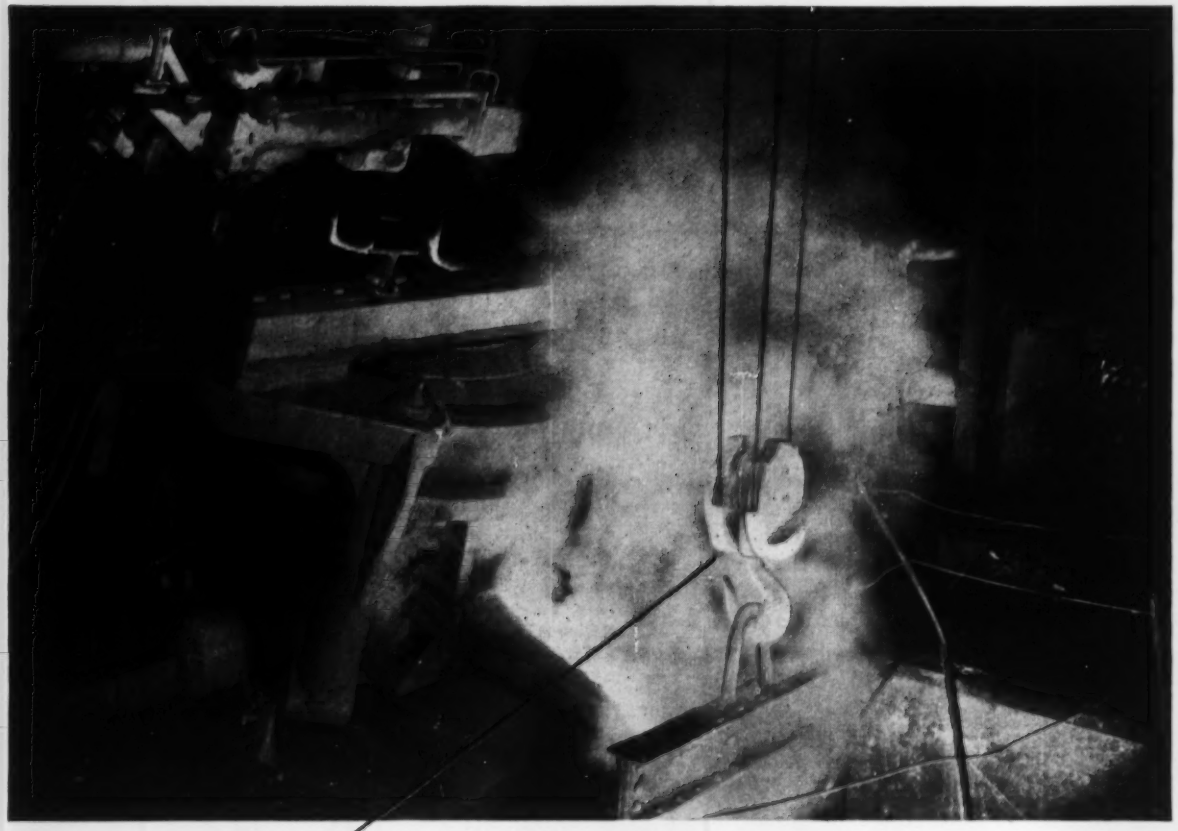
for the wire you require—check first with Wickwire

THE COLORADO FUEL AND IRON CORPORATION • Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia

WICKWIRE WIRE
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION
CF&I

Watch for the balance of John's day in succeeding advertisements that take him to his office, through his plant, and finally home to the relaxation of his living room.

2483



New 2-ton-per-hour Lectromelt Furnace in the steel foundry of Worthington Corporation, Harrison, N. J.

LECTROMELT* helps Worthington meet today's demand for finer steels

Finer steels mean even higher quality Worthington products. Precise control of the Lectromelt* Furnace contributes to greater uniformity of their steels and more accurate alloying.

Production is given a boost, too, by fast top-charging of this furnace—a principle pioneered by Lectromelt. Downtime for charging is brief, so time, labor and power are saved. Larger scrap and a wider variety of scrap can be used.

If you are interested in improving and speeding up your steel or iron production, a Lectromelt Furnace may be the answer. Lectromelt engineers will help you decide.

For a free copy of Bulletin No. 9 describing Lectromelt Furnaces, write Pittsburgh Lectromelt Furnace Corp., 323 32nd St., Pittsburgh 30, Pa.

Manufactured in... GERMANY: Friedrich Kocks GMBH, Dusseldorf... ENGLAND: Birlec, Ltd., Birmingham ... FRANCE: Stein et Roubaix, Paris... BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege ... SPAIN: General Electrica Espanola, Bilbao ... ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co., Ltd., Nagoya

*REG. T. M. U. S. PAT. OFF.

MOORE RAPID

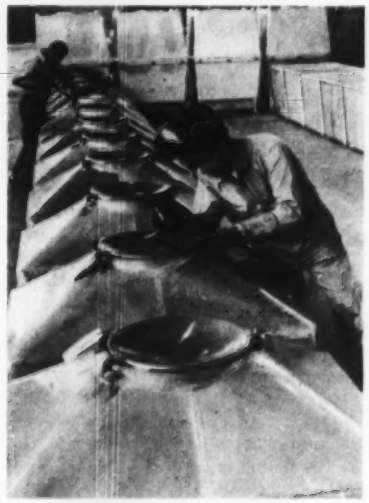
WHEN YOU MELT... *Lectromelt*

Willys Motors Diversifies

Starts production of aluminum bulk shipping container at its San Leandro, Calif., plant

WILLYS MOTORS INC., a wholly owned subsidiary of Kaiser Motors Corp., Toledo, O., purchased the business of Nest-A-Bin Co., Denver. An improved model of the aluminum bulk shipping container developed by the Colorado firm is being produced by the newly created Kaiser Nest-A-Bin Division of Willys at its San Leandro, Calif., plant, augmenting and diversifying the plant's principal work of fabricating and assembling aircraft parts.

Willys engineers have redesigned and tested the lightweight bin for broadest possible industrial use in shipping, handling and dispensing granulars, powders and pastes. The bins are constructed of a high-strength, corrosion-resistant aluminum alloy to withstand severe handling conditions and allow years of use without replacement.



KAISER NEST-A-BIN DIVISION
. . . producing bulk containers

The Willys bin is distinguished from other bulk containers by their "nesting," durability and convenience of direct bottom dispensing, company officials say. Products subject to contamination, deterioration or damage from the elements are protected in the bins, which are hermetically sealed at all openings by special nontoxic, plastic gaskets.

Armco Buys Coal Company

Armco Steel Corp., Middletown, O., acquired the stock of Princess Dorothy Coal Co. which operates the Robin Hood mine in Boone county, West Virginia.

Purchases Casting Firm Stock

Major portion of stock in Wilmington Casting Co., Wilmington, O., a gray iron foundry, has been sold to Institutum Divi Thomae Foundation, Cincinnati. This was announced by Platt S. Horton, founder and president of the company.

Arnot Expands in Canada

In the second major expansion move within two months, Arnot Jamestown Division of Aetna Steel Products Corp., New York, acquired 30,000 sq ft of manufacturing space in Port Credit, Ont. All material used in fabrication of the firm's patented "packaged private offices" in the new plant will come from Canada.

Buffalo Fabricator To Move

Perma Lite Metal Awning Corp., Buffalo, manufacturer of aluminum products, purchased a building at 1172-78 Main St. to which it will move its operations in the fall. The new plant has 42,000 sq ft of floor space, triple the company's present plant area.

Establishes Adhesive Division

Carboline Co., a division of Mullins Non-Ferrous Castings Co., St. Louis, manufacturer of corrosion-resisting synthetic materials, established an Adhesive Division.

Lau Blower Builds in Canada

A wholly owned subsidiary of Lau Blower Co., Dayton, O., will be opened Sept. 1 in Kitchener, Ont. Lau Blower makes heating and air-conditioning blowers and produces several lines of window, attic and standard fans. The new Canadian firm, to be known as Lau Blower Co. of Canada Ltd., will begin operation with the production of furnace blowers, including assembled blower, motor mount, housing and hardware. Expansion into manufacture of other Lau products is expected to follow later.

Need Bound Volumes?

IS YOUR set complete of bound volumes of STEEL, or its predecessor, *Iron Trade Review?*

STEEL has a limited number of extra bound volumes for each year from 1916 through 1947, excepting the second half of 1916, all of 1917 and the second half of 1918. While they last, you can get them for your reference library without charge. Just write STEEL, 1213 W. Third St., Cleveland 13, O.

Howard Electric Co. Formed

Howard Foundry Co., Chicago, organized a subsidiary, Howard Electric Co., which will manufacture a new type of electrical underfloor system for office and industrial buildings. Full production will start Sept. 1. James W. Hudson is general manager of the subsidiary, while A. J. Carroll is assistant manager in charge of engineering and production.

United Mfg. Changes Hands

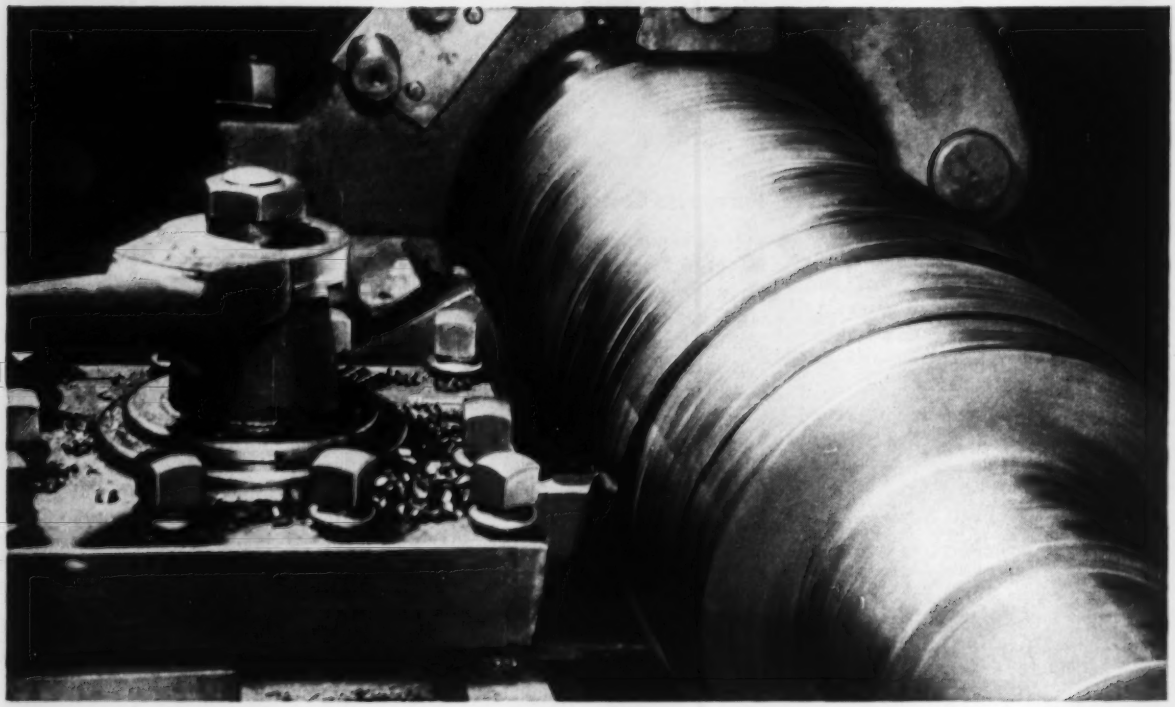
W. L. Maxson Corp., New York, acquired the business of United Mfg. Co., Hamden, Conn., a division of United Advertising Corp., and appointed Edward E. Keefe as a vice president in charge of the division. The purchase will enable Maxson to expand its operations into the electrical test equipment field. Production will be continued at Hamden in a plant leased from United Advertising.

Ducommun Opens Warehouse

Ducommun Metals & Supply Co., Los Angeles, opened a sales office and warehouse at 1300 Wilson Ave., National City, Calif., under managership of Richard Fin-

(*Please turn to page* 80)

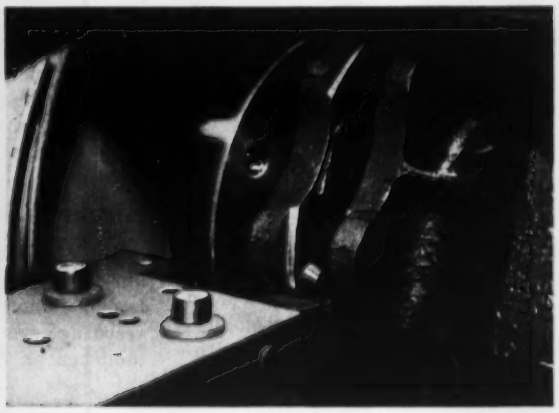
CARBOLOY ANNOUNCES NEW GRADE 350 CARBIDE



CARBOLOY GRADE 350 for light roughing, general finishing of steel

ELECTRIC MOTOR SHAFT. Carboloy Grade 350 increased the number of linear inches cut by 30% over other carbides used for roughing and finishing this steel motor shaft.

SETUP: Material—AISI 1045 modified (hot-rolled). **Speed**—300 SFPM. **Feed**—0.020 inch. **Depth of cut**—1/16 to 1/8 inch. **Coolant**—Yes.



CARBOLOY GRADE 370 for heavy-duty steel cutting at higher speeds

JET ENGINE TURBINE WHEEL SHAFT. A single Grade 370 tool now handles roughing and finishing at General Electric's Lynn River Works. Formerly, two tools were needed. Though operating at around 1700° F., Grade 370 increased tool life at least 40%.

SETUP: Material—4340 steel with Brinell hardness from 269 to 321. **Speed**—200 SFPM. **Feed**—0.018 inch. **Depth of cut**—3/8 to 3/4 inch. **Coolant**—No.

TRANSMISSION CASING for fork lift truck. Machine downtime was sliced 50% and tool life extended almost 40% when Yale and Towne switched to Grade 370. Despite irregular steel casting, tool life on plunge facing operating increased 5 times with Grade 370.

SETUP: Material—Irregular cast steel with chilled spots and sand occlusions. **Speed**—318 SFPM. **Feed**—0.006 inch. **Depth of cut**—3/16 to 1/2 inch. **Coolant**—No.

FOR LIGHT ROUGHING, GENERAL FINISHING OF STEEL

On-the-job tests show that Grade 350 cuts faster, lasts longer than existing carbides; boosts production up to 30%

Carboloy® Grade 350—the second of the new Series 300 steel-cutting carbides—combines superior wear resistance and extreme toughness to an extent never before possible in the light roughing and general finishing range of steel machining. This has been proved during exhaustive on-the-job customer tests and applications. Grade 350 is outperforming all existing carbides by up to 30% in this medium-duty range.

Built-in Tip Rigidity

A new, carefully controlled manufacturing process gives Grade 350 a unique grain structure and built-in structural rigidity. This rigidity enables Grade 350 to effectively resist the high temperatures (around 1800°) encountered during high-speed machining . . . conditions which cause the cutting edges of other carbides to deform.

Two Steel-Cutting Grades Now Available

Grade 370 for heavy-duty steel cutting, introduced late in 1953, was the first of the new Carboloy Series 300 carbides. Now Grade 350 extends the machining range of this new series to medium-duty steel cutting. Both grades are available immediately in a wide range of Standard Carboloy Tools and blanks. Send coupon, today, for new Price List (GT-300) containing complete specifications and ordering information.

GRADES 350 AND 370 STOCKED IN WIDE RANGE OF STANDARD TOOLS AND BLANKS

For light roughing and general finishing of steel

GRADE 350 — STOCK ITEMS
Blanks—6 styles, 40 sizes
Tools—5 styles, 20 sizes

For heavy-duty steel cutting

GRADE 370 — STOCK ITEMS
Blanks—6 styles, 55 sizes
Tools—9 styles, 26 sizes

CARBOLOY

DEPARTMENT OF GENERAL ELECTRIC COMPANY

"Carboloy" is the trademark for products of the Carboloy Department of General Electric Company

CARBOLOY
Department of General Electric Company
11141 E. 8 Mile Street, Detroit 32, Michigan

☐ Send Price List GT-300, containing specifications and prices on new Grades 350 and 370

☐ Have a Carboloy Field Engineer call

Name_____ Position_____

Company_____

Address_____

City_____ Zone_____ State_____

(*Continued from page 77*)

frock. The firm also increased its metal and shearing facilities in its main factory.

Blue M Electric Building

Blue M Electric Co., Chicago, manufacturer of electric ovens, furnaces and related temperature control equipment, is erecting a building in Blue Island, Ill. Occupancy will begin Sept. 15.

Diecaster Enlarges Capacity

Martin-Ruegg Co., maker of brass and aluminum die-castings, constructed a 10,000-sq-ft building at 355 W. Olive St., Los Angeles, for increased production.

H & N Mfg. Expands Plant

With completion of larger plant facilities, H & N Mfg. Corp., Los Angeles, is completing its organization of factory representatives in key industrial centers throughout the country. Production will be concentrated on its line of swivel couplings in eight different basic types for rotation in one, two and three planes in high and low-temperature applications at pressures to 15,000 psi, in pipe sizes ⅜-in. through 12 in.

Tube Specialist Moves

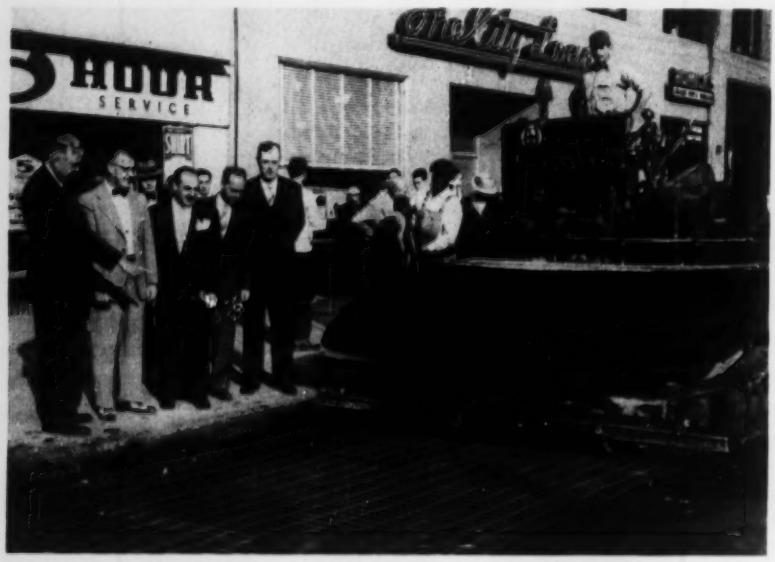
C. A. Roberts Co., steel tube specialists, moved into its new headquarters and warehouse at 2401 25th Ave., Franklin Park, Ill.

Hubbard & Co. Changes Hands

Charles Dyson and associates purchased Hubbard & Co., Pittsburgh, producer of pole line hardware, aluminum street lighting standards and brackets for public utilities, and railroad track tools and track accessories. The company also is the parent concern for Sand's Level & Tool Co., Clinton, Ind.; Hubbard Aluminum Products Co., Pittsburgh; Beall Tool Division, East Alton, Ill.; and Unit Rail Anchor Co., Chicago. James H. Knowles, president, will continue in that capacity and becomes the chief executive officer of Hubbard & Co.

Bellows Co. Opens Branch

Bellows Co., Akron, established a sales office at 330 Municipal Court Bldg., Ann Arbor, Mich.



Welded Wire Fabric Is Wedded to Asphalt

Walter F. Munford, president, American Steel & Wire Division, U. S. Steel Corp., envisions a wide market for welded wire fabric in its use to reinforce asphalt highways. He is shown above, left, with other company and city officials observing employment of this technique at a bus stop on Public Square in Cleveland. This marks the first time it has been used in an Ohio community. Sheets of welded fabric bind the asphaltic mixture together so as to offer maximum resistance to damage caused by the elements and vigorous wear and tear of traffic

Daniel J. Gurta is in charge of the office. The firm makes devices for pushing, pulling or holding materials during machine work.

Garrett Forms Divisions

Aero Engineering Co., Mineola, N. Y., and Air Cruisers Co., Belmar, N. J., recently acquired by Garrett Corp., Los Angeles, are being operated as divisions of the parent firm. A new Canadian subsidiary, formerly Aero Sales Engineering Ltd., Ottawa, Que., was renamed Garrett Mfg. Corp. of Canada Ltd.

Glauber Brass Co. on Block

Glauber Brass Co., Kinsman, O., is being offered for sale by its owner, H. B. Salter of Madison, O. The firm makes plumbing supplies in a 40,000-sq-ft plant which has a foundry, machine shop and plating facilities.

Brush Buys Instrument Firm

Brush Electronics Co., a division of Clevite Corp., Cleveland, purchased Digital Instrument Co., Coral Gables, Fla., manufacturer of electronic counters. Meryl C. Burns, former president of the Florida concern, will serve as manager of the Digital instrument department of Brush Electronics with headquarters at 3405 Perkins Ave., Cleveland.

Buffalo Firms Consolidate

Best, Kellner & Rogers Machine & Welding Corp., Buffalo, and its affiliate, R. F. Nauman Mfg. Co., purchased Deck Bros. Inc., machinists, and its affiliate, Automatic Buffing Machine Co., that city.

Universal Atlas Expanding

Universal Atlas Cement Co., a subsidiary of U. S. Steel Corp., Pittsburgh, plans to proceed with construction programs at its Fairborn, O., and Independence, Kans., plants. Expansion at Fairborn will include larger finished cement storage, addition of a rotary kiln and other facilities which will increase by one-third the annual capacity at this plant. Construction at Independence will include a new raw

THE NEWEST AND MOST REVOLUTIONARY DEVELOPMENT

IN THE 82 YEAR HISTORY OF THE ABRASIVE INDUSTRY

CUT STEEL

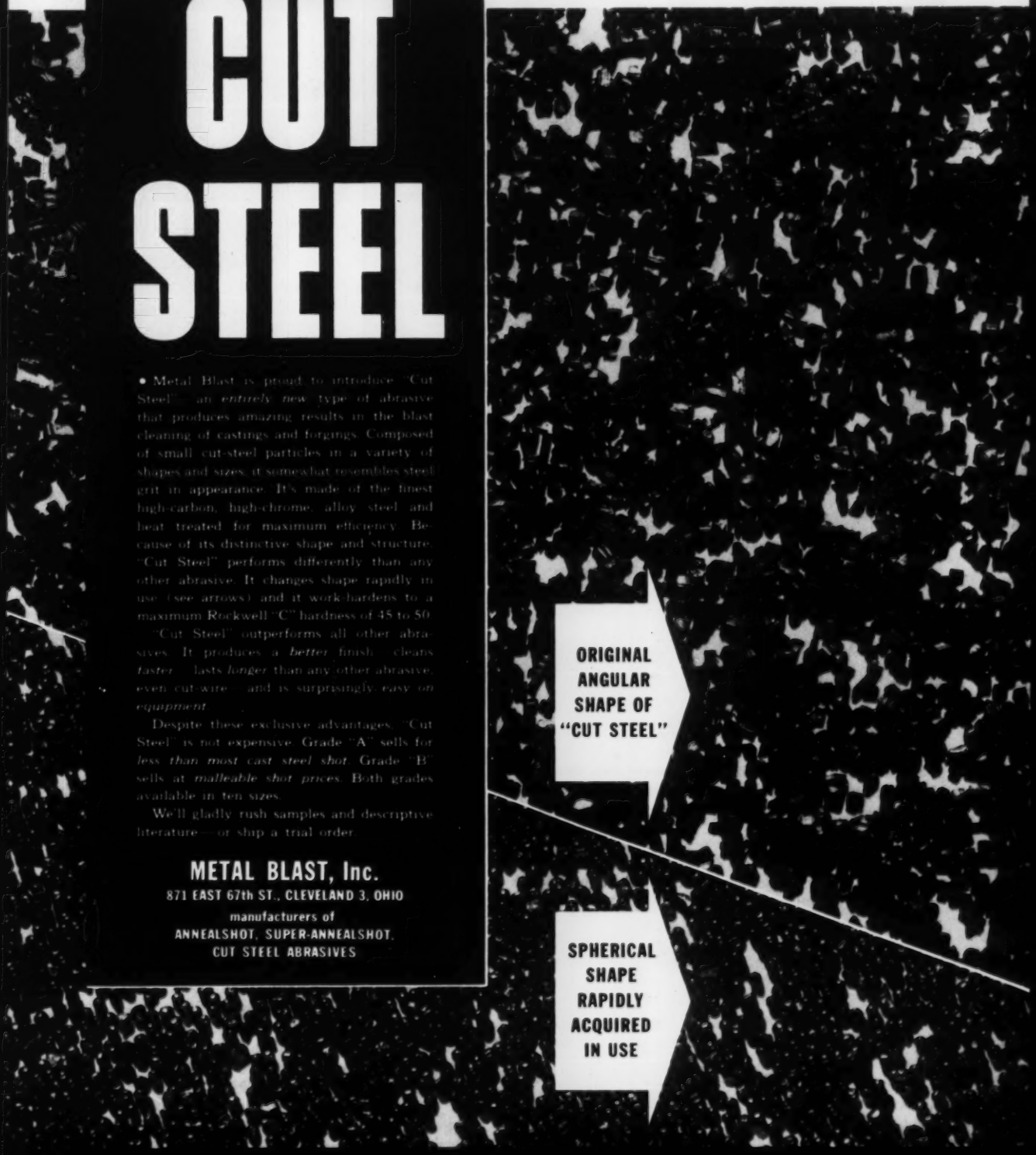
• Metal Blast is proud to introduce "Cut Steel" — an *entirely new* type of abrasive that produces amazing results in the blast cleaning of castings and forgings. Composed of small cut-steel particles in a variety of shapes and sizes, it somewhat resembles steel grit in appearance. It's made of the finest high-carbon, high-chrome, alloy steel and heat treated for maximum efficiency. Because of its distinctive shape and structure, "Cut Steel" performs differently than any other abrasive. It changes shape rapidly in use (see arrows) and it work-hardens to a maximum Rockwell "C" hardness of 45 to 50.

"Cut Steel" outperforms all other abrasives. It produces a *better* finish — cleans *faster* — lasts *longer* than any other abrasive, even cut-wire — and is surprisingly *easy on equipment*.

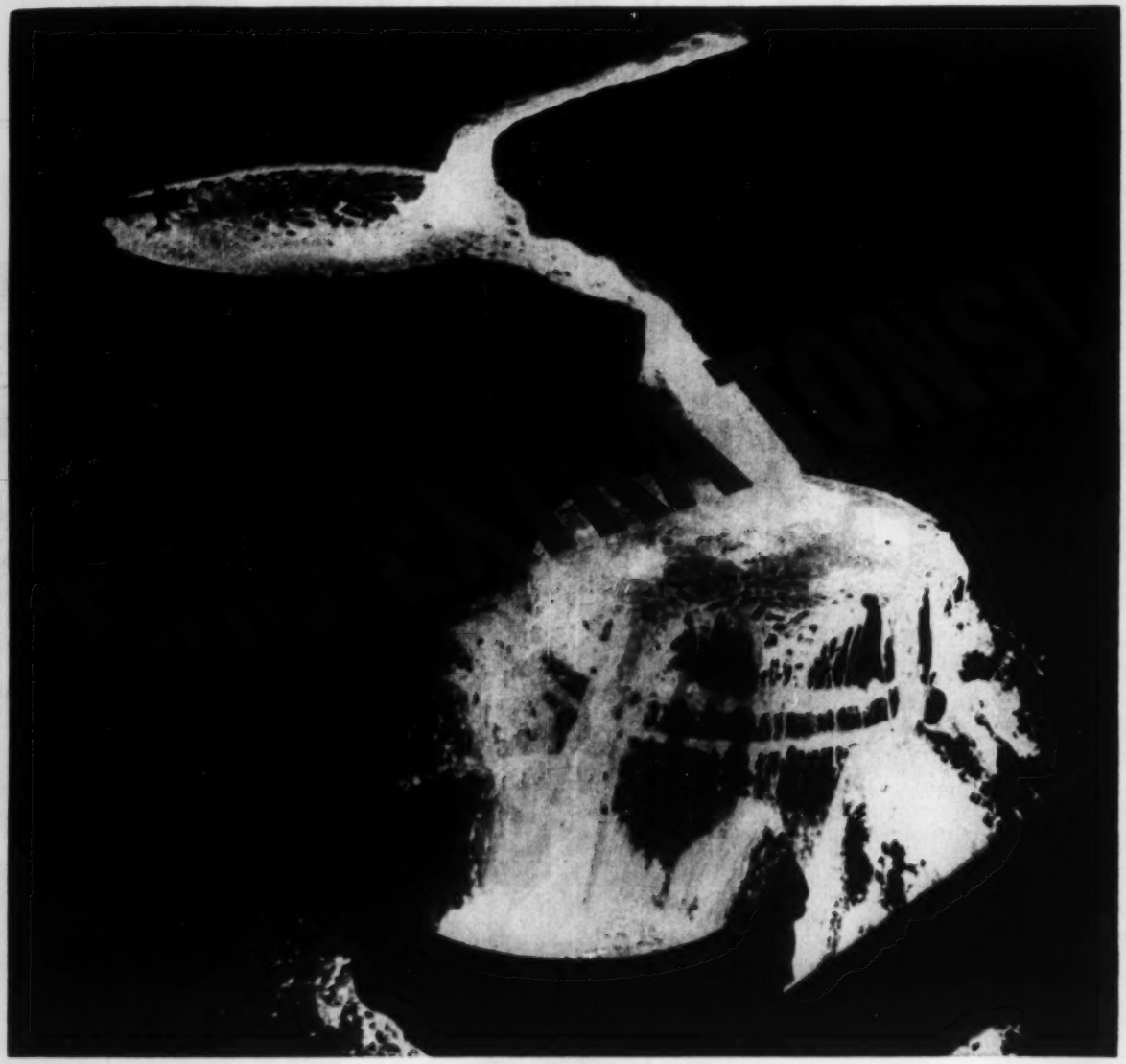
Despite these exclusive advantages, "Cut Steel" is not expensive. Grade "A" sells for *less than most cast steel shot*. Grade "B" sells at *malleable shot prices*. Both grades available in ten sizes.

We'll gladly rush samples and descriptive literature — or ship a trial order.

METAL BLAST, Inc.
871 EAST 67th ST., CLEVELAND 3, OHIO
manufacturers of
ANNEALSHOT, SUPER-ANNEALSHOT,
CUT STEEL ABRASIVES



SOONER *or* LATER *you'll change to* CUT STEEL



"Since being rammed with Permanente 165, this open hearth bottom produced 18,130 tons in a 30-day period—500 more tons than this furnace ever has produced." How? Less down-time!

This report from a leading steel mill is only one of the many proving how the superiority of Permanente 165 ramming mix results in increased production and lowered costs.

Permanente 165 is a high MgO periclase material of high refractoriness that is self-bonding by crystalline growth. Impurities are minimized because no sintering agents, no low melting fluxes are present.

Its high density and absence of shrinkage cracks and connected voids give a greater resistance to the chemical attack of iron oxide and basic open hearth slag.

Upon request, your Kaiser refractory engineer will promptly offer you research, design and installation service to help you obtain more steel tonnage, and improved quality—at lower bottom cost per ton.

Call or write *Kaiser Chemicals Division,* Kaiser Aluminum & Chemical Sales, Inc. Regional sales offices: OAKLAND 12, California, 1924 Broadway; AKRON 8, Ohio, First National Tower Bldg.; CHICAGO, 518 Calumet Bldg., 5231 Hohman Ave., Hammond, Indiana.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Refractory Brick and Ramming Materials
Dolomite • Magnesia
Magnesite • Alumina • Periclase

More Power to Texas

A workman in the turbine factory of General Electric Co., Schenectady, N. Y., wraps the series loops of the stator windings on a 33,000-kw steam turbine-generator to be shipped soon to a power station in Laredo, Tex.

materials crushing plant; installation of facilities for raw materials storage, drying and blending; and replacement of old equipment.

Detrex Opens Regional Office

Detrex Corp., Detroit, maker of chemicals and industrial metal-cleaning equipment, established a New England regional office at 35 Colony St., Meriden, Conn., A. D. Chabot is manager.

Duplicon Forms New Department

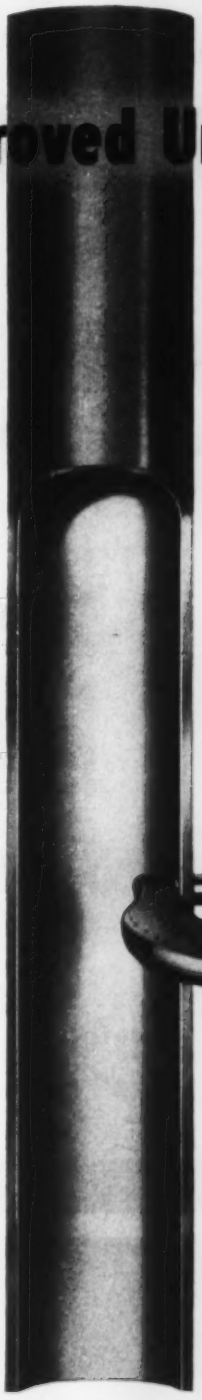
Duplicon Co., Westboro, Mass., established a sheet plastic forming department. The toolmakers, designers, and equipment of the firm's Short-run Metal Stamping Division are at the service of the new department.

Kobe Firm Reorganized

Kobe Inc., newly organized by founders of the original company of the same name, purchased the business and facilities of Dresser Equipment Co.'s Kobe Division. General office and plant of the new company will remain in Huntington Park, Calif. Under the reorganization, Surface Alloys Inc. becomes a wholly owned subsid-

(*Please turn to page* 86)

Proved Under PUNISHMENT



STANDARD CYLINDER TUBING

"Mirror Finished" to precision tolerances, it's used in automobile shock absorbers, power steering, hydraulic pumps . . . without further sizing or finishing.

Here's a busy part of an automobile shock absorber that's built for brutal punishment. It's Standard's modern "mirror-finish" Cylinder Tube. So that it won't weaken or leak under punishment, every inch of this tubular "toughie" must measure up to exacting specifications—in cylinder finish . . . in I.D. tolerances as close as .001" . . . in extreme uniformity of wall thickness and concentricity . . . in internal pressure resistance, to shocks up to 9000 P.S.I. The elimination of broaching or further processing of any kind effect significant savings for our customers in product assembly.

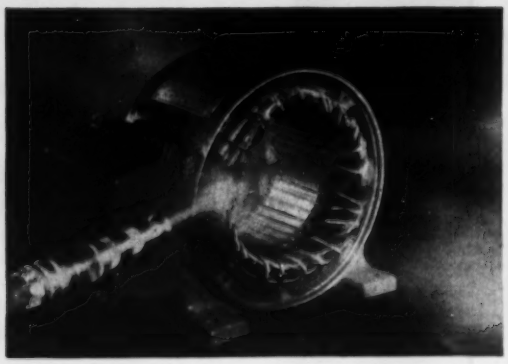
As you see here, the engineering involved behind the application of tubing to your product is *more than skin deep at Standard.* Our engineers will gladly show you why in helping you with your tubular application—whether it involves a simple structural or mechanical member . . . or a precision application.

Send for 8-page folder on all Standard products or see Sweet's Design Catalog.

MAKE "STANDARD" YOUR SOURCE FOR—

- WELDED MECHANICAL TUBING
- WELDED STAINLESS TUBING
- BOILER AND HEAT EXCHANGER TUBING
- EXCLUSIVE "RIGIDIZED" PATTERNS

STEEL TUBING SIZES: ½" O. D. TO 5½" O. D. — .028 TO .260 WALL.
STAINLESS SIZES: ¼" O. D. TO 4½" O. D. — .020 TO .154 WALL.



Here's a Life-Line "A" stator that has been given multiple dips and bakes of Bondite. There is no evidence of vapor penetration after being exposed to the toughest insulation test—a jet of steam.

Try tearing a piece of Life-Line's slot insulation, Mylar*. Mechanical strength is eight times greater than ordinary slot cells. Dielectric strength is ten times greater than standard design requirements.

*Trade Mark for DuPont polyester film

There's more to motor insulation than its ability to repel water

These demonstrations show how new Life-Line A insulating materials provide greater protection for wire, slots and complete stator.

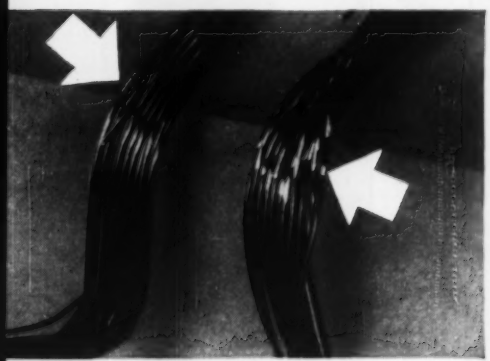
New and improved motor insulations are the word of the day. Actually, there is a considerable range between the run-of-the-mill "improved" insulations and the really outstanding types now available. There is only one way to judge them—by comparison.

For example, many new stator insulations do a more effective job of shedding water. But Life-Line's® new Bondite goes a step further... it repels vapors that penetrate ordinary water-shedding insulations.

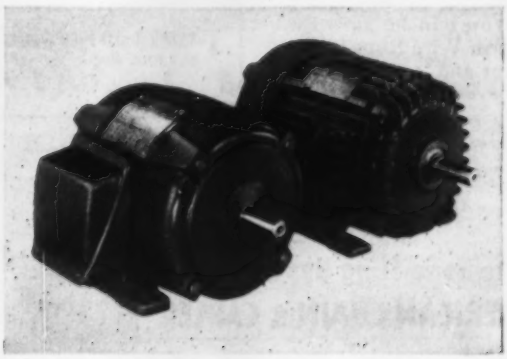
The secret is in the silicone additive that is impregnated throughout Bondite instead of being just applied as a thin outer layer. The complete story of Life-Line's Bondite, Bondar and other new motor improvements is contained in the new Life-Line Booklet B-6154. For your copy, write: Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa. J-21847-A

YOU CAN BE SURE...IF IT'S Westinghouse

A duck's ability to shed water is only feather deep. A simple wetting agent dissolves the duck's protective coating and he sinks. Many water-shedding motor insulations react much the same; expose them to a simple solvent and they deteriorate.

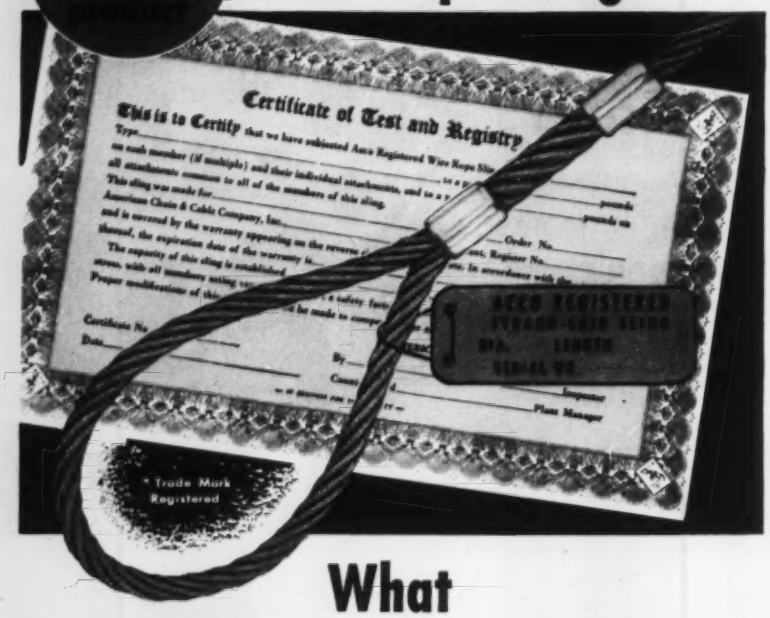


These two coils have been baked for 50 hours at 400° F. Bent around a finger, the ordinary insulation on the right coil flaked off. Life-Line's Bondar insulation on the left remained intact.



Dependable performance takes balanced design. That's why *every* component in the new Life-Line "A" has been redesigned and integrated with the whole. The result is a motor with superior performance.

ACCO Registered* Wire Rope Slings



What ACCO Registered Means

• Primarily it means greater safety for your men and machines when loads are carried in the air in your shop. It means insurance against dropping a load which could tie up production.

But that's only part of the story. The name ACCO *Registered* on the slings you use means greater efficiency because of better design of endings and attachments. It means lower overall sling costs because every part of every ACCO *Registered* Wire Rope Sling has the same strength as the catalog breaking strength of the rope itself. ACCO even magnafluxes each hook to make doubly sure it will serve you well.

And it means that the sling has been proof-tested at the factory to twice its rated capacity. You can be sure that every ACCO *Registered* Wire Rope Sling is the safest, strongest and lowest cost lifting tool you have ever used.

Best of all, you can get them when you need them from a nearby stock. Contact your ACCO *Registered* distributor today for full information and prices. Or, write our Wilkes-Barre, Pa., office.

1. The best material
2. Unit safety factor (on bodies, rings, links, safety shackles, hooks)
3. Proof test of complete sling to twice rated capacity
4. Actual field service test of each model
5. Metal identification tag on each sling
6. Signed Registry Certificate with each sling

ACCO

TRADE MARK

Wire Rope Sling Department
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn. • In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

(*Concluded from page* 83)

iary of Kobe Inc. Officers of the company are C. J. Coberly, president; C. J. Coberly Jr., vice president and general manager; and Harry C. Gunetti, vice president for manufacturing.

REPRESENTATIVES

Columbia Steel & Shafting Co., Pittsburgh, appointed Nate A. Wade as special representative in metropolitan Detroit. Columbia produces cold-finished steel bars. Mr. Wade was formerly executive vice president of Osco Steel Co., Detroit. Prior to that he was associated with Columbia Steel and its affiliated companies.

Kaiser Aluminum & Chemical Sales Inc., Oakland, Calif., appointed American Brass & Copper Co., that city, as a distributor of its aluminum rod, bar, sheet products and extrusions. W. I. Grimmer is vice president of American Brass & Copper; John Rector, sales manager.

Chain Belt Co., Milwaukee, appointed White Sales Corp., Scotts, Mich., as a distributor for its line of industrial products.

Firth Sterling Inc., Pittsburgh, appointed Wessendorf Nelms & Co., Houston, as a distributor of its tools and tips, high-speed toolholder bits and drill rod.

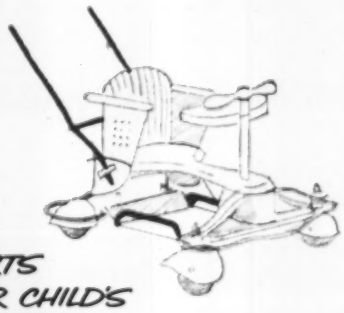
Miniature Precision Bearings Inc., Keene, N. H., appointed Ripley & Bowron, Cleveland, as sales representatives and distributors for its bearings in parts of Ohio, Pennsylvania and western Virginia.

Wilcox Engineering Co. is now representing **American Machine & Metals Inc.'s DeBothezat Fans Division,** East Moline, Ill., in Cincinnati and Dayton, O. United Equipment Co., Columbus, represents the division in that area.

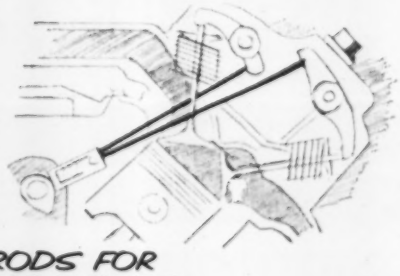
Wiretex Mfg. Co., Fairfield, Conn., maker of wire mesh baskets, retorts, muffles, grids, screens, racks and similar products, appointed Troutman Associ-

FROM *the Bundy Sketchbook*
TO *jog a designer's imagination*

MODERN ROOM DIVIDERS



PARTS FOR CHILD'S STROLLER

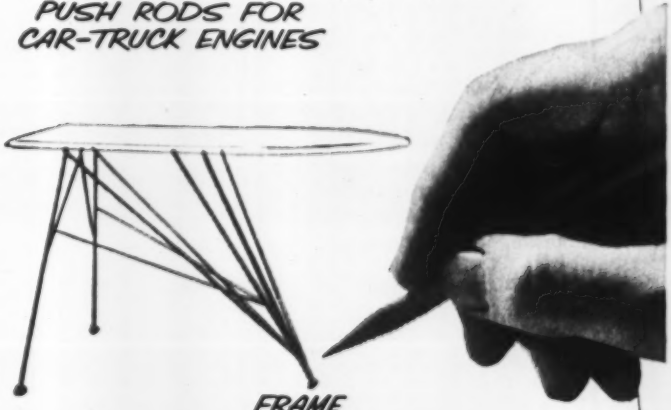


PUSH RODS FOR CAR-TRUCK ENGINES

REMARKS The success (or failure) of that new tubing application hinges largely on the tubing you specify. Why not tip the scales in your favor by using strong, lightweight Bundyweld, the only tubing double-walled from a single metal strip. Added bonuses: Bundy's expert engineering assistance, unexcelled fabrication facilities.

WRITE today for catalog or for help in developing your tubing idea.

BUNDY TUBING COMPANY
DETROIT 14, MICHIGAN



FRAME FOR IRONING BOARD

WHY BUNDYWELD IS BETTER TUBING

Bundyweld starts as a single strip of copper-coated steel. Then it's . . .

continuously rolled twice around laterally into a tube of uniform thickness,

and passed through a furnace. Copper coating fuses with steel. Result . . .

Bundyweld, double-walled and brazed through 360° of wall contact.

BUNDYWELD TUBING®

DOUBLE-WALLED FROM A SINGLE STRIP

Leakproof
High thermal conductivity
High bursting point
High endurance limit
Extra-strong
Shock-resistant
Ductile
Lightweight
Machines easily
Takes plastic coating
Takes plating
Bright and clean
No inside bead
Uniform I.D., O.D.

Bundy Tubing Distributors and Representatives: *Bridgeport, Conn.:* Korhumel Steel & Aluminum Co., 117 E. Washington St. • *Cambridge 42, Mass.:* Austin-Hastings Co., Inc., 226 Binney St. *Chattanooga 2, Tenn.:* Pearson-Deakins Co., 823-824 Chattanooga Bank Bldg. • *Chicago 32, Ill.:* Lapham-Hickey Co., 3333 W. 47th Place • *Elizabeth, New Jersey:* A. B. Murray Co., Inc., Post Office Box 476 • *Los Angeles 58, Calif.:* Tubesales, 5400 Alcoa Ave. • *Philadelphia 3, Penn.:* Rutan & Co., 1717 Sansom St. • *San Francisco 10, Calif.:* Pacific Metals Co., Ltd., 3100 19th St. • *Seattle 4, Wash.:* Eagle Metals Co., 4755 First Ave., South • *Toronto 5, Ontario, Canada:* Alloy Metal Sales, Ltd., 181 Fleet St., E.

Bundyweld nickel and Monel tubing are sold by distributors of nickel and nickel alloys in principal cities.

ates, Louisville, as its sales representatives in that area. The company also appointed H. W. Paret, Sewickley, Pa., as its representative for western Pennsylvania and eastern Ohio.

ANNIVERSARIES

Springfield Foundry Co., Springfield, Mass., is celebrating the 100th anniversary of its founding. The firm specializes in gray iron castings. With a capacity of 35 tons per day, production ranges in size from one ounce to five tons.

Malleable Iron Fittings Co., Branford, Conn., is observing the 100th anniversary of its founding this year. The company has concentrated on production of pipe fittings, hardware and oil burners.

ASSOCIATIONS

Steel Founders' Society of America, Cleveland, appointed George K. Dreher as secretary. For the past year he has been in charge of foundry operations and a director of Waukesha Foundry Co., Waukesha, Wis.

Industrial Furnace Manufacturers Association Inc., Washington, changed its name to **Industrial Heating Equipment Association Inc.** Carl L. Ipsen is executive vice president.

Richard F. Straw, Howe Scale Co., Rutland, Vt., was elected president of **National Association of Scale Manufacturers Inc.**, Washington. George C. Reiley of John Chatillon & Sons, New York, was elected vice president. Arthur Sanders was renamed executive secretary and treasurer.

Machinery Dealers National Association, Washington, re-elected R. M. Nathans as president. Mr. Nathans is a partner of Kings County Machinery Exchange, Brooklyn, N. Y.

Washington Metal Trades Inc., Seattle, re-elected Ferdinand Schmitz Jr., Berger Engineering Co., that city, as its president; Frank DeBruyn, Isaacson Iron Works, vice president; and H. Densil Halley, executive secretary. Carlos Flohr of Flohr & Co., succeeds Gordon Anderson of Puget Sound Sheet Metal Works, as treasurer.

American Home Laundry Manufacturers' Association, Chicago, appointed Guenther Baumgart as executive director. Homer Reeve is head of the organization and president of Easy Washing Machine Corp., Syracuse, N. Y.

Harold S. Geneen, vice president and controller, Jones & Laughlin Steel Corp., Pittsburgh, was elected president of Pittsburgh Control of **Controllers Institute of America**, New York. Edward H. Eaton, controller and assistant treasurer, Pittsburgh Forgings Co., Coraopolis, Pa., was named vice president of the Control. New directors of that group include H. J. Alverson Jr., Firth Sterling Inc.; T. Ames Wheeler, Allegheny Ludlum Steel Corp.; and N. R. Althauser, Aluminum Co. of America, all of Pittsburgh.

New president of the institute's Hamilton, Ont., Control is E. P. McGavin treasurer, Hayes Steel Products Ltd., Merritton, Ont., while V. W. T. Scully, Steel Co. of Canada Ltd., has been named a director.

William G. VonBerg, Pfaudler Co., Rochester, N. Y., has been elected secretary of the local group in that city.

Among those elected directors of institute local Controls in their respective cities are: R. M. Braund, American Steel & Wire Division, U. S. Steel Corp., Cleveland; H. C. Fechner, Laclede Steel Co., St. Louis; H. A. Greene and John Pugsley, Tennessee Coal & Iron Division, U. S. Steel Corp., Fairfield, Ala. (Birmingham Control); E. W. Herbert, Great Lakes Steel Corp., Detroit; F. W. Kahrl, Cooper-Bessemer Corp., Mt. Vernon, O. (Columbus Control); G. M. Layne, Mid-States Steel & Wire Co., Crawfordsville, Ind. (Indianapolis Control); J. V. Lester, Standard Pressed Steel Co., Jenkinton, Pa. (Philadelphia Control); and Don A. Leahy, Allison Steel Mfg. Co., Phoenix, Ariz.

STEEL's 1954 Management Series . . .

The editors of STEEL herewith present the seventh in their ten-part series, Program for Management for 1954. The complete list:

1. **Now You Have To Sell** (Feb. 22, p. 91)
2. **Build Better Bosses** (Mar. 22, p. 81)
3. **Automation—How Far Should You Go?** (Apr. 12, p. 87)
4. **Stabilizing Production, Employment** (May 17, p. 87)
5. **Integrate Your Distribution** (June 21, p. 113)
6. **Personnel in Distribution** (July 19, p. 91)
7. **Transportation in Distribution**
8. **Product Diversification**
9. **Foremen—Bridge to More Efficiency**
10. **Product Design**

Reprints Available

If you want reprints of this and the other articles on distribution, write STEEL, 1213 W. Third St., Cleveland 13, O. The first one appeared June 21; the second, July 19.

Transportation In Distribution

Move Ahead with Better Traffic Management

A TRAFFIC manager for a welding electrode manufacturer negotiated a better rail freight classification and saved his company 60 per cent on its shipping bill.

A traffic manager for an Indiana appliance maker consolidated inbound tonnage and outbound shipments to produce savings of $50,000 a year.

A traffic manager for a Louisville fabricator eliminated branch warehouses in favor of public warehousing to the tune of a $2000-a-month saving.

A traffic manager for a New York electronics parts firm convinced top management of the value of company-owned transport and netted savings of $156,000 the first year.

What Can Be Done—Those are some of the things being done to improve and save money in one of the major areas of distribution — transportation and the closely related function of storage. It pays to take a new look at transportation and storage. They account for about one-fifth of America's total $100-billion annual distribution bill—$17 billion for freight and $2.5 billion for storage. A $60,000 annual saving in freight charges is equivalent to a $1-million gross in new sales.

In ferment today is the distribution function of our economy. The retailing, wholesaling, advertising, servicing and transportation required to move goods from the point of manufacture to the point of sale are all like wine about to turn. Will the new form be good or bad? As we can at least partially control the fermentation of liquor so can we try to get desired qualities while our distribution system goes through changes.

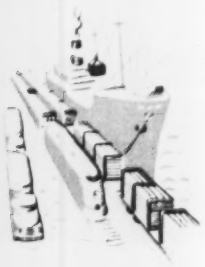
The Methods—How is this new wine of distribution to be made? Retailers and wholesalers have made some notable contributions with their suburban shopping centers, self-service merchandising and mechanized material handling. Manufacturers long ago proved their creative talents in production matters, but most of them have been slow to apply those abilities to the distribution side of their business. A few brilliant and heartening exceptions have proved that manufacturers can do wonders with distribution through more efficient selling, better marketing research, improved integration of distribution and manufacturing functions, better use of distribution personnel and improved traffic management.

Ways and means to tackle the first four have been discussed in earlier articles in STEEL's Program for Management (selling, Feb. 22, 1954, p. 91; marketing research, Dec. 7, 1953, p. 125; integration, June 21, 1954, p. 113; personnel, July 19, 1954, p. 91). The remainder of this article deals with traffic management. Of all the phases of distribution, none shows more activity than transportation.

Evolution in Traffic

"Big developments are in progress or coming in the physical distribution of goods," says H. W. von Willer, Erie Railroad's vice president for traffic. "The traffic manager has before him a major challenge," warns John A. Wallace, Ford Motor Co.'s director of traffic.

The challenge arises because of changes in transportation, because



What a Traffic Manager Does

THE PRIMARY JOBS, IN ORDER OF IMPORTANCE

1. Ascertain rates
2. Trace shipments
3. Route shipments
4. Audit freight bills
5. Determine classification
6. Maintain tariff files
7. Select types of carriers
8. Select specific carriers
9. Secure permits in case of embargo or strike
10. File claims
11. Divert, reconsign shipments in transit
12. Expedite shipments
13. Prepare loss and damage claim evidence
14. Prepare rate case evidence
15. Handle cases before regulatory bodies
16. Arrange for adequate car and truck supply
17. Consolidate and pool orders
18. Arrange for payment of carriers
19. Prepare shipping documents
20. Shipping
21. Arrange for outside audit of freight bills
22. Supervise marking of freight
23. Supervise loading of freight
24. Supervise weighing of freight
25. Control import-export shipments
26. Supervise packing of freight
27. Receiving
28. Warehousing

Source: Indiana State Chamber of Commerce

the field is fertile in cost-cutting opportunities and because a new kind of man, the professional traffic manager, is eager to show what he can do.

The Changes—You see the transportation changes all around you—competitive battles between trucks and railroads; proposed overland conveyor belts to move bulk items like ore and coal hundreds of miles; the proposed pipeline to move coal like oil underground; truck trailers to ride piggyback on railroad freight cars.

You can see the cost-cutting opportunities if you look just under the surface. The Chamber of Commerce of the U. S. estimates that, on the average, freight charges are 10 per cent of the selling cost of a product. Trucks are getting a hefty slice of the transportation pie, but railroads in the U. S. still haul more freight than all other forms of transportation combined —$9 billion last year compared with $8 billion for trucks and other carriers.

The Job—To help make those savings and changes are some 6000 traffic control men in industry. They are employed by about 3000 companies, which have separate traffic control departments.

As recently as ten years ago, the traffic manager, if he even had that title, was rarely more than a clerk who too often hid behind baffling rate schedules to conceal his superficial knowledge of the job. But in the past decade the traffic manager has become a professional man. He probably belongs to the American Society of Traffic & Transportation and/or Delta Nu Alpha, a transportation fraternity. More than a score of universities offer degrees in transportation, and many more offer courses in the subject. Associated Traffic Clubs of America and National Industrial Traffic League do a lot of educational work in the field.

Power—The Chesapeake & Ohio Railway says the traffic manager controls nearly one-fourth of the industrial wealth produced in the U. S. At the traffic manager's call is America's $25-billion transportation machine, employing 2 million persons. Railroads alone have a capital investment of over $15 billion; other kinds of carriers have facilities worth $10 billion. Over $2 billion a year represents maintenance and depreciation expense.

Since World War II, railroads have spent $39 billion on maintenance, another $10 billion on modernization. In 1953 alone, they bought about $3.3 billion worth of supplies. That kind of spending is necessary because railroads will carry more than half of the 1109 billion ton-miles of intercity industrial freight that will be hauled in 1954.

What Traffic Men Do

What is traffic management? What do traffic managers do?

Basically, a traffic manager regulates and synchronizes transportation and production through knowledge of routing, loading, rates, regulations, types and conditions of equipment and facilities—controlling movement of goods to meet operating schedules and customers' needs. In a survey of 31 companies, the Indiana State Chamber of Commerce finds that there are 28 primary functions (see the accompanying checklist).

The Rate Question — The most common task for traffic men is to learn the rates. With at least 30,000 important shipping points in the U. S., the possible different combinations of rates for firms shipping from outlying plants and warehouses may be in the millions.

Determination of rates for each shipment by use of a confusing tariff file is only a small portion of rate work, points out the Indiana state chamber. It has just published a study of traffic management by Dr. Paul B. Blombren and Joseph R. Hartley of the Indiana University School of Business. "Every good traffic department," they say, "negotiates for lowered rates on its firm's products when that seems feasible." Most of the tonnage shipped in this country

moves on special commodity rates, which cannot be secured without expert analysis and negotiation.

Negotiations Help — An Illinois automotive parts maker has negotiated rate reductions that will save $100,000 this year. "Probably even more importantly," says the president, "the reduction will help keep us competitive with other manufacturers in our markets."

A good negotiator in your traffic department is also a good man to have around in determining freight classification. Classification is the grouping of articles with similar transportation characteristics into categories to be used in applying rates. It allows the application of a single freight rate to a vast number of items classified together.

Simplified Complexity — Rate making is thereby simplified, but the problem of classification itself is complex. Weight and bulk of the article, value, susceptibility to damage, type of container, cost of service rendered are just a few of the considerations that determine classification. But it pays to master the complexity. The welding electrode manufacturer mentioned won that 60-per-cent saving by getting his classification reduced.

The Uniform & Consolidated Freight Classification Committee makes classification rulings for railroads. The truckers have a similar body. Nearly all railroads are a party to their committee's rulings, and a majority of truckers subscribe to their organization's findings.

Lawyer, Too—Still another big job for the modern traffic manager is legal. Traffic prepares all the necessary evidence to present its views in rate cases before carrier committees and state or national regulatory bodies. Besides collecting the evidence, many a traffic manager handles the cases before regulatory bodies, too.

The object, of course, in those legal forays is to protect the shipper from excessive shipping costs.

Always Costs—All 28 of the primary functions of a traffic manager can lead to cost cutting, but the three just discussed in greater detail are the major keys to savings. The Indiana chamber points out: "It is strange that many companies seem to regard freight rates and costs as something fixed by governmental decree and resign themselves to the payment of whatever is charged them."

Expert traffic men often can reduce your freight bill by negotiation on rates and classification or through legal action with regulatory bodies. But traffic men are handicapped by the mystery shrouding transportation costs. It's common to merge transportation expenses with the cost of purchases on inbound shipments and with selling costs on outbound movements. The result is that transportation costs are rarely emphasized since they are concealed. Firms selling f.o.b. factory sometimes ignore freight costs entirely. The tendency is to let the customer worry about the shipping bill. The customer may do just that—and change suppliers.

Sales Tool — Many a shrewd traffic man has won plaudits from the sales department because his lower freight costs clinched an order. A Cleveland foundry got an order from a Detroit customer by giving him more traffic information than the competitor did. In particular, the Cleveland firm pointed out that rough iron castings shipped from Cleveland to Detroit could go at 5 cents per hundred pounds cheaper if shipped in 80,000-pound lots instead of customary 40,000-pound consignments.

There are other ways to cut costs, too. Farm equipment that is shipped knocked down can save up to 35 or 40 per cent on freight charges. You can save 35 per cent on shipping costs by nesting pails.

Beyond Costs—Good traffic management can do far more than just reduce costs. Intangible benefits can be important, too. Listen: "By integrating average cost of distribution into laid-down prices, we have expended our markets which increased our gross sales without incurring additional transportation cost." And this: "Customer rela-

The Traffic Manager:

HIS QUALIFICATIONS AND TRAINING

HOW DO YOU develop a traffic manager and department? Most managers are recruited from the railroads or trucking companies. But not always. A prominent Cleveland traffic manager started out as a certified public accountant.

Experience in industrial or carrier traffic activities is the qualification most sought when filling openings, says National Industrial Conference Board. The normal check points—neatness, ability to get along with people, a liking for the work and at least a high school education—are required. Good traffic men are quick with details. They are expected to have a general knowledge of freight rates, classification ratings, routing, plus a wide acquaintanceship among personnel of the carriers. Of the group, rate work is the most demanding.

H. J. Heinz Co. has developed a comprehensive training course for traffic personnel. The traffic manager often does his own training of juniors. The National Industrial Traffic League, local colleges and local traffic clubs offer training programs.

How the Traffic Manager Co-operates with Other Departments

(PERCENTAGE OF 31 FIRMS REPORTING)

R %	O %	N* %	FUNCTIONS
			CO-OPERATE WITH EXECUTIVE DEPARTMENT
48	23	29	Advise on plant location
90	6	4	Advise on siding and other carrier agreements
90	3	7	Arrange for transportation of executives
32	35	33	Participate in production planning
			WITH ACCOUNTING DEPARTMENT
90	0	10	Audit freight bills or arrange for outside audit
93	3	4	Furnish proof of delivery to credit division
90	3	7	File claims for overcharge, loss and damage or reparations
83	0	17	Work out credit arrangements with carriers
			WITH SALES DEPARTMENT
86	11	3	Furnish rate memoranda to salesmen
61	18	21	Determine most desirable unit of sales on the basis of rates
61	18	21	Furnish rate information to aid in extension of market areas
68	32	0	Furnish information on competitors' rates and rate requests
82	14	4	Furnish rates and other information for prospective customers
54	21	25	Show most advantageous sales areas from traffic standpoint
89	7	4	Assist customers in transportation problems
61	21	18	Collect information on warehouse location and related problems
68	14	18	Operate or advise on operation of distribution warehouses
82	0	18	Supply data on impending rate and classification changes
14	4	82	Gather automobile cost data for determination of salesmen's mileage allowances
			WITH PURCHASING DEPARTMENT
80	7	13	Show most advantageous purchasing areas from traffic standpoint
57	23	20	Supply information on most economical size of purchase
67	7	26	Work with purchasing to consolidate l.c.l. shipments
63	10	27	Assist in preparation of contracts where terms affect traffic
87	7	6	Give information on impending rate and classification changes
			WITH MANUFACTURING DEPARTMENT
60	4	36	Suggest improved methods of material handling
73	4	23	Advise on package specifications and packing
33	30	37	Advise on material handling equipment
67	23	10	Prescribe or advise on operation of shipping and receiving departments
90	3	7	Maintain a steady flow of inbound and outbound traffic
13	23	64	Advise on product design
50	23	27	Advise on warehousing
			WITH LEGAL DEPARTMENT
93	2	5	Prepare rate case evidence
90	1	9	Prepare loss and damage claim evidence
90	2	8	Appear before rate committees and regulatory bodies
79	0	21	Advise on preparation of contracts for transportation equipment
			WITH PERSONNEL DEPARTMENT
83	0	17	Facilitate passenger movement of employees
87	0	13	Handle transportation of household effects for employees
			WITH ADVERTISING DEPARTMENT
56	4	40	Advise on descriptive matter on packages and in advertising literature with respect to classification probabilities
41	2	57	Place adequate advertising on company-operated transportation equipment

* R: Performed regularly. O: Performed occasionally. N: Not performed.

Source: Indiana State Chamber of Commerce

tionship has been improved." Or this: "Saving in transit time now permits close production scheduling and minimum inventories."

Many of the intangible benefits come from traffic's increasing co-operative functions. The accompanying table shows results of a survey on the subject by the Indiana chamber.

Matter of Locale—Note that in co-operating with the executive department, 48 per cent regularly advise on plant location. That's becoming increasingly a transportation function of distribution. You can get around high freight costs by building more, but smaller, plants nearer to your suppliers and markets.

Yet there are some dangers in dispersion. While plants can become too big to be economical, they can become too small, also. Studies by the Department of Defense indicate that the major reason for defense contractors' failure to fulfill a contract is that the facilities were too small to do the job.

Sales—Freight rates usually restrict the practical geographical limits of your market, so co-operation between traffic and sales departments is a natural. By keeping freight expenses to a minimum, traffic men can directly assist in adding new customers.

A maker of drawing compounds has been able to enter the lush Detroit market by using his own transportation.

And there's another side to this question of geography, also. You can go too far afield for your customers. Shell Oil Co. in the early 1930s discovered that freight costs were eating up most of its profits in some states. It pulled out of them. Now it's not nationwide, but it netted $115 million last year.

Purchasing — One of traffic's most important services is to purchasing officials in the analysis of rates to indicate the best source of supply. Chrysler Corp., like all auto companies, has a corps of men who do nothing but that.

Traffic has a responsibility to co-operate with customers, too. Lawrence A. Pomeroy Jr., traffic manager for National Malleable & Steel Castings Co., says his firm will provide customers with routing, classification, carrier selection and

other traffic data even though the terms of the sale may require that the customer pays the freight bill. Other departments send out educational booklets on the traffic services they can supply buyers.

Carriers and Traffic Men—Enlightened traffic managers in industry recognize that their interests are really identical with the carriers, even though the rate squabbles sometimes make the opposite appear true. Progressive men in industry say: "We know the service the carriers can render and do not make unfair requests upon them." Or: "We do not encourage freight rates that are not compensatory to the carriers."

James B. Griffin, Scovill Mfg. Co.'s superintendent of traffic, comments: "Too many traffic men forget the objectives of their job and think they must give all the roads business. They dilute tonnage by spreading it among many carriers; thus the carriers don't have enough business to give good service, nor can they anticipate schedules properly. This thinning out of business has caused much of the more than 100-per-cent increase in freight charges on l.c.l. shipments since 1946."

Cost of Administering—The job of traffic management costs money. Because the service is often so intangible, top management is frequently reluctant to bear the expense. But as the treasurer of an Indiana company says, "Every firm pays for good traffic management. Those which do not have it pay most."

Of the 31 firms surveyed by the Indiana chamber, administration costs ranged between $10,000 and $1.2 million a year. Expressed as a portion of the transportation dollar, they ranged from 0.8 cent to 11.6 cents.

Traffic Man's Status—The nation's traffic directors have an improved status in the distribution picture. In 6 of the 31 reporting firms in the Indiana chamber's study, the traffic manager reported directly to the president or manager. In 16 cases only one executive stood between the traffic manager and the president or general manager of the company. For an additional nine firms, traffic was only two positions down the organizational ladder. Three of the 31 traffic directors surveyed had titles of vice president.

On the questionnaire there were 24 different locations on the organizational chart for the traffic manager. Distribution experts believe the traffic man should be in the sales or distribution side of the business, but they also agree that his position on the organizational chart is not nearly as important as his freedom to make decisions.

Status of Storage

One special phase of traffic management, warehousing, is getting new attention.

Some 100,000 persons work today for the nearly 2800 public warehousing firms in the U.S. Storage costs account for 3 to 5 per cent of the price of the goods you buy, and American industry spends $2.5 billion a year for the service.

Definition—"Warehousing is the storage of goods pending consumption or other use," says Wilson V. Little, executive secretary, American Warehousemen's Association, Merchandise Division. Dr. John H. Frederick of the University of Maryland says manufacturers use public warehouses for six reasons.

Reduce Investment — They reduce investment in storage space. Public warehouses make it unnecessary to enter into long-term leases or permanent real estate investments. There is no need to maintain the premises used for storage. There are no real estate taxes to pay on storage space. There is no payroll for warehouse employees. No management of the warehouse is involved. There's the opportunity to expand storage requirements at peak seasons with a minimum capital investment and at minimum expense.

Financing Aid—Warehouse receipts may also be used to help in financing. They may be used as the basis of bankers' acceptances. They may be negotiable or non-negotiable as desired. They provide for independent custodianship of the goods. They clearly define the liability of the warehouseman.

Save Storage Expenses — On smaller or variable stocks, the public warehouse can handle storage more cheaply than a privately owned warehouse.

Spot Stocks—Public warehouses give the manufacturer the chance

How the Traffic Moves

ESTIMATED INTERCITY FREIGHT HAULAGE

(By all forms of transportation; in billions of ton-miles)

YEAR	RAIL WAYS	MOTOR TRUCKS	GREAT LAKES	INLAND WATERWAYS	PIPE LINES	AIR LINES
1939	335	43	76	20	65	
1940	375	51	96	22	64	
1941	477	57	114	27	78	
1942	641	50	122	26	75	
1943	730	48	116	26	96	
1944	741	49	119	31	132	
1945	684	56	113	30	123	0.001
1946	595	64	96	28	93	0.01
1947	658	78	112	35	104	0.04
1948	641	88	119	40	119	0.07
1949	529	94	97	42	110	0.09
1950	605	126	119	46	138	0.14
1951	650	133	120	62	152	0.21
1952	618	140	104	64	157	0.22
1953	609	148	115	75	162	0.24
		Per Cent of Total Ton-Miles				
1939	62.1	8.0	14.1	3.7	12.1	0
1950	59.1	11.2	11.6	4.5	13.5	0.01
1951	58.1	11.9	10.7	5.6	13.6	0.02
1952	57.1	12.9	9.6	5.9	14.5	0.02
1953	54.9	13.3	10.4	6.7	14.6	0.02

Based on Interstate Commerce Commission figures, as modified by American Waterways Operators Inc., except for air line figures developed by Air Cargo Inc. 1953 ton-miles and percentages estimated by STEEL. Airlines figures include air freight only, not air express. All figures exclude baggage and mail.

B&O Railroad

Picking the Carrier

CHOOSING the right carrier is one of the traffic department's top drawer jobs. Traffic managers co-operating in a study by the National Industrial Conference Board name these advantages and disadvantages of various types of transportation:

Railroads—When the distance is over 300 miles, the preference is for rail shipment. That's because of the railroads' lower freight rates at those distances and because they have nationwide coverage. Railroads offer the more satisfactory service for bulk raw materials, large and heavy objects and quantity shipments.

Trucks—Motor truck transportation is preferred on relatively short hauls or when speed and service are prime requisites. Since the railroads won lower rates on steel products, rail and truck rates on those items are competitive, even on shorter distances. But on shorter hauls, trucks can usually carry it faster.

Water—Water shipments, either by barge or boat on inland waterways or by sea-going vessels, are used mostly in bulk shipments where time is not important. The rates are lower than for either truck or rail.

Air—Air cargo accounts for less than 1 per cent of total industrial shipments today. The most common industrial shipments by air are emergency in nature—parts to repair a machine or components to keep an assembly line going. Common industrial shipments that go regularly by air include light components, some plastics and rubber goods.

In routing, ship as the crow flies and you won't go wrong. And coordinate your shipping. Industry pays over $40 million a year in demurrage. A box car or trailer is an expensive warehouse.

to have spot stocks around the country from which he may service customers quickly. The manufacturer places stocks in warehouses, from which deliveries may be made to customers on either a c.o.d. or an accredited-list basis. The accredited list is a development of public warehousing: A manufacturer supplies warehousemen with lists of customers who are in good credit standing. These orders may be filled at the warehouse without first passing through the home office of the manufacturer. Often manufacturers using this method don't even need sales offices in the area where the warehouse is.

Less Branch Warehouse Cost—A fifth aid given by public warehouses is in cutting branch warehousing costs. The company may have a branch sales office, but often the warehouse can function as its branch storage center, as in the case of spot stocks.

Lower Freight — Public warehouses can also cut your freight charges by enabling you to use pool or consolidated car arrangements or the freight-in-transit device. A pool car is a carload made up of many small lots, shipped to several consignees. Such cars are sent to a public warehouse at a central point for distribution. The consolidated car differs from the pool car. It is a carload of goods assembled by some agency—freight forwarder or public warehouse—from several shippers and sent to a public warehouse for distribution. In both cases, the carload rates apply on goods that otherwise would have been shipped by the more expensive l.c.l. route. The freight-in-transit device allows a shipper to get through-destination shipping rates even though the shipment may stop up to four times enroute to drop off part of the load at public warehouses. Goods may also be stored in transit at public warehouses, but they will keep the through-destination freight rate.

The trend in private warehousing is to do as little of it as possible. All auto builders, for example, shun the practice like the plague.

Cube Space—Sears Roebuck & Co. spots two other trends in both public and private warehousing—the greater use of cube space and increased reliance on material handling equipment. As of Jan. 1, 1954, 91 per cent of Sears' warehouse space was suitable for tiering an average of 16 feet. Of that 91 per cent, 98 per cent was equipped with lift trucks. Sears and others want fork trucks that will navigate in four-to-six-foot aisles, not the 10-to-12-foot aisles most common now.

Troubles in Transportation

Traffic management, for industry and common carriers, is making progress in warehousing and other aspects of distribution, but it still has a long way to go in at least five major areas: Railroad earnings, roads, national transportation policy, freight loss and damage and standardization of pallets.

Railroad Earnings — So concerned are railroad suppliers with low rail earnings that in July some 22 of them formed a Committee of Railroad Suppliers to tell the public how important the railroads are. They're pointing out that the lines are being taxed to death, bargained to death and regulated to death.

The suppliers' move is a step recognizing that the railroads' plight is the business of everybody, not just railroaders.

Dilemma of Roads—America's giant traffic jam is a serious deterrent to efficient use of highway transportation. There are 38,000 miles of main highways connecting the chief U.S. cities. Included in that mileage are 7000 where it isn't safe to pass another car. There are 3.1 million miles of roads in the U.S. altogether. The President has suggested a $50-billion joint federal-state highway building program that will take ten years to complete. The proposal has had only a lukewarm reception from the states because most governors think it will give Washington too much power.

The record $3.2 billion spent last year for highways may be surpassed this year because the 1954 Congress voted more funds than ever before for roads. But the problem is still miles and miles from solution. A partial answer may be more toll roads—11,000 miles are scheduled to be built by 1959.

Roads aren't the only transportation facilities we're short of. Airlines are still hauling less than 1 per cent of all intercity tonnage partly because of inadequate terminals. Inland water port facilities also need modernization.

Bicker and Squabble—A third problem far from solution is the bickering and squabbling among the various forms of transportation. With shippers and the government in the middle, truckers and railroaders are now fighting it out over piggybacking, for example, a type of transportation that would probably benefit both trucks and railroads.

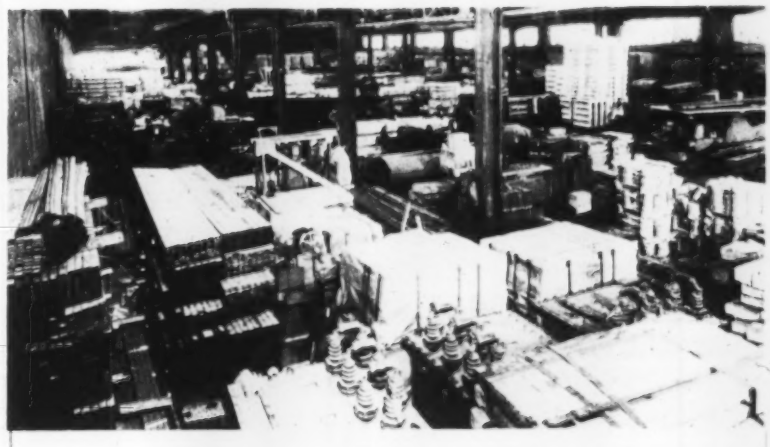
Actually, all forms of transportation have wide areas in which they complement one another. Freight forwarders illustrate that. On l.c.l. or less-truck-load lots, shippers can get multiple transport service through the 100 freight forwarders in the nation who offer through service via truck and rail, and sometimes air, on one bill of lading.

What's needed is an over-all transportation policy. Washington is in the best position to formulate one. President Eisenhower recognizes that and has designated Commerce Secretary Sinclair Weeks as chairman of a top-level government committee to report by next Dec. 1 on desirable changes in federal policies affecting the transportation forms.

Freight Losses—A fourth problem needing traffic management's attention is freight loss and damage. On the railroads it was $102 million in 1949, $90 million in 1950, $100 million in 1951, $107 million in 1952. Last year it hit a record $110 million. Losses are comparable in trucks.

L. L. Adams, assistant to the vice president, U.S. Steel Corp., asks: "How can the shipper or receiver ever be satisfied even if he gets a claim payment? It's usually for the bare cost of the loss and does not allow for profit or clerical costs in adjusting the claim." Losses are usually as much the shipper's fault as the common carrier's. "Needed," point out Nickel Plate Railroad spokesmen, "are better packaging and loading by shippers, better equipment handling by the carrier."

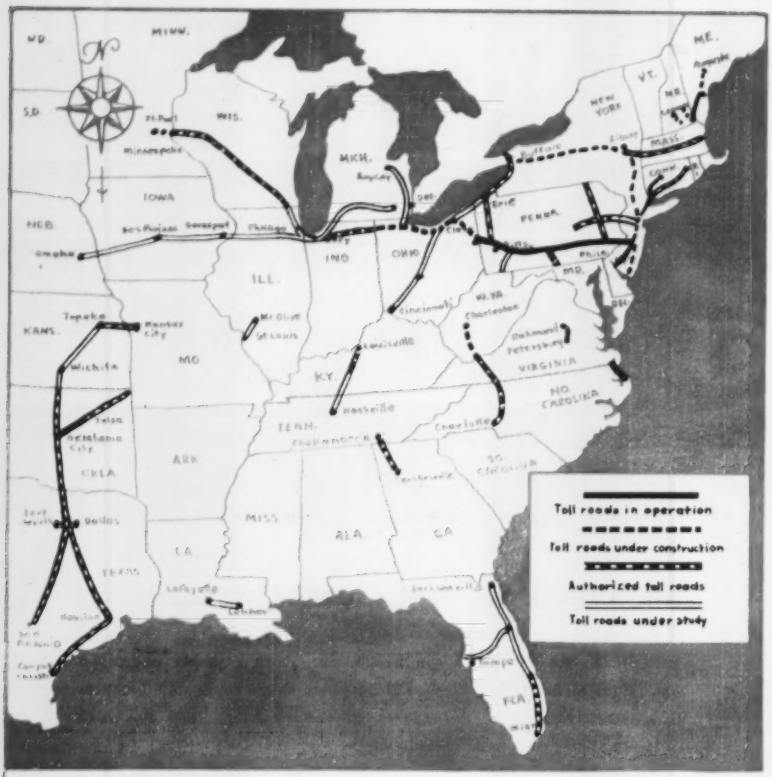
Pallets—A fifth major problem —and this is almost entirely industry's responsibility— is standardization of pallets. Two major railroads report 72 sizes used. Even a small one weighs 84 pounds, for which a merchandise rate is charged. Sears has been able to standardize on three pallets to handle 97 per cent of its diverse merchandise. Industry



Public Warehouses:

THE ANSWER TO YOUR STORAGE PROBLEM?

A PUBLIC WAREHOUSE can handle just about anything under the sun. Equipment Storage Corp., Chicago, here stores automobile bumpers (suspended from one of the cranes), voltage regulators, steel dies, steel in sheets, bars, coils and formed shapes.



New Routes in Transportation

NEW or modified transportation techniques are turning up all over the map. Toll roads may eventually ease America's giant traffic snarl because an additional 11,000 miles of them are proposed to be built between now and 1959.

agrees that it could standardize on 10 or 15 sizes. If that day ever comes, look for an independent agency to be formed that will lease pallets.

"The day is coming," predicts Erie Railroad's W. H. von Willer, "when the railroads will ship pallets free, provided they are standardized."

The Miles Ahead

Some of those problems may be solved, or at least minimized, by dramatic new developments in transportation.

"Piggybacking is the most significant thing to come along in railroading since the diesel," says Mr. von Willer. He sees in it a way for better service, lower costs and better utilization of our transportation facilities.

Open Signal—Now that legal tangles are clearing up, the project is going ahead. Roads such as the Baltimore & Ohio; Delaware, Lackawanna & Western; Erie; Nickel Plate; Pennsylvania; and Wabash are leasing or buying their own equipment to perform the service. Other roads, such as the New York Central and the New Haven, are opening their service to existing truck lines. Rates are generally comparable to truck rates.

Truckers have a comparable plan involving ships. McLean Trucking Co. proposes to build four ships which would have capacity for 240 truck-trailers. Plans call for six round-trip sailings per week between Providence, New York and either Wilmington, N. C., or Charleston, S. C. At least two other organizations have similar plans.

Coal Imitates Oil—And things are moving in pipeline transportation. Pittsburgh Consolidation Coal Co. and Cleveland Electric Illuminating Co. plan to build a 110-mile pipeline to carry emulsified coal from Cadiz, O., to Cleveland. Prospects anticipated: Cheaper industrial electricity because of a 40-per-cent saving over current coal freight rates.

Giant Conveyor—Nor is that all. Riverlake Belt Conveyor Lines proposes to transport iron ore and coal between Lake Erie and the Ohio river via an overland belt conveyor. Unable for the last couple of years to get right of eminent domain from the Ohio state legislature, the project won a new lease on life this spring when the St. Lawrence seaway was approved. Sponsors claim that the conveyor will stretch the seaway to the Ohio river.

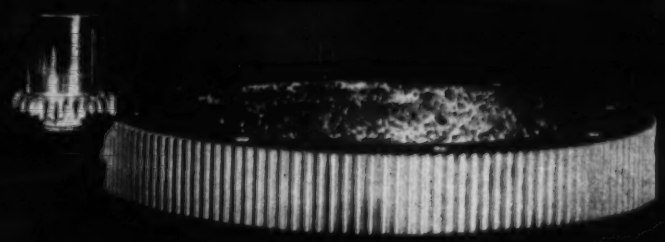
All the above projects are just starting or at least have the capability of starting. Industrialists, however, aren't stopping there. Roy Fruehauf, president of Fruehauf Trailer Co., predicts Americans may someday travel across the country on rolling roads—superconveyor belts powered by the energy of the sun. That sounds fantastic, but a moving passenger road is already operating. It's a conveyor running a couple of hundred feet between two commuter railroads in New York City.

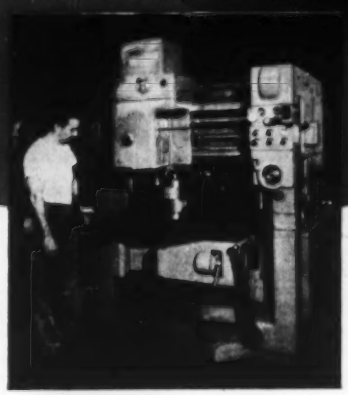
The Creative Challenge

There's creative energy aplenty among transportation men. And there are also problems that need that creative energy.

Transportation and all other phases of distribution are in ferment. The job ahead is to channel those changes so they will better serve America's economy.

Production-Run Specialist... with Job-Shop FLEXIBILITY

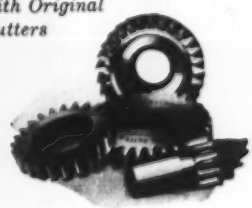




For gear-cutting jobs, on production runs or in small lots, this ultra-modern heavy-duty Fellows "36" is a fundamental machine for any Gear Shop. It provides a combination of advantages never before available. You can cut spur or helical gears—from broad-face pinions up to gears of 36" p.d.—external or *internal*. And you can cut herringbone gears, cams, ratchet teeth, splines, special contours, etc.

With an assortment of standard cutters you are ready to turn out multiple production runs, fast—or shift from one item to another "with the greatest of ease." Ask your Fellows Representative to give you some revealing facts on the production record of the 36-Type Gear Shaper, or write the nearest Fellows Office.

For Absolute Quality Control
Tool up with Original
Fellows Cutters



THE Fellows
GEAR SHAPER COMPANY

Head Office and Export Department: 78 River Street, Springfield, Vermont • *Branch Offices:* 319 Fisher Bldg., Detroit 2, Michigan • 5835 West North Avenue, Chicago 39, Illinois • 2206 Empire State Bldg., New York 1, N. Y.

GEAR SHAPERS • SHAVING MACHINES • CUTTERS AND SHAVING TOOLS • GEAR INSPECTION INSTRUMENTS • THREAD GENERATORS • PLASTICS MOLDING MACHINES

THE LONG VIEW

on the buying and leasing of industrial equipment

JONES & LAMSON'S 3-WAY MARKETING SERVICE

To further facilitate the expansion of American productivity and markets, Jones & Lamson now offers *three* plans for the procurement of machine tools.

They are designed to accommodate the widest possible variety of industrial needs, and to establish top industry standards for sound practice.

Outright Purchase

The outright purchase of capital equipment is generally preferred. It offers the obvious advantages to the user of lower cost, freedom of operation, and full profit from the use of the equipment.

"Pay-from-Productivity" Plan

Plans are also offered for those who prefer making payments from the additional savings created by the use of new and modern machine tools, and on terms more favorable than can be obtained from most credit sources.

Payments may be made on a one to five year basis, in equal monthly installments, with a small down payment and a charge at the rate of 3.25 percent on the original unpaid balance.

(Payment Analysis per $1,000. Sixty Equal Monthly Payments)

	Remaining Principal	Total Payment During Year	Total Cumulative Payments
Payment at Shipment	—	—	250.00
End of 1st year	600.00	190.89	440.89
End of 2nd year	450.00	181.89	622.78
End of 3rd year	300.00	172.89	795.67
End of 4th year	150.00	163.89	959.56
End of 5th year	None	154.89	1,114.45

The Lease Plan

Leasing may be advantageous when working capital is inadequate for necessary plant modernization or expansion, and when alternative uses of capital are more pressing or more profitable.

Under the Jones & Lamson plan, the customer gets the normal 1 year guarantee, and he may offer to buy the machine at the end of any year, at the then existing fair market value or at a predetermined option price.

To provide maximum flexibility, the plan is available in four variations, the principal differences being in the annual rental and return charges. With each plan, a 10 percent deposit is required, to be refunded to customers upon fulfillment of transaction. The minimum payment plan is shown below.

(Annual Rental per $1,000 Selling Price)

Year	Rent	Return Charge
1st	$180	$500
2nd	180	360
3rd	180	240
4th	180	120
5th	180	None
6th	180	None
7th	60	None
8th	60	None
9th	60	None

JONES & LAMSON MACHINE COMPANY

517 Clinton St., Springfield, Vermont, U. S. A.

Turret Lathes – Fay Lathes – Thread & Form Grinders – Optical Comparators – Threading Dies

STEEL
August 23, 1954

Technical Outlook

SAFE HYDROGEN HANDLING— Hydrogen supply networks for heat treating and brazing processes need not be a potential danger spot if pressure-drops create a dangerous hydrogen-air mix. A system developed by a Bureau of Standards researcher automatically floods the network with an inert gas when hydrogen pressure falls below a certain level. Heart of the system is a tank of helium having a pressure valve set from 10 to 20 pounds lower than that of hydrogen.

BETTER CASTINGS— Corning's Vycor (almost pure silica) is showing up as a promising shell molding material for high temperature jet alloys. Surface finish on parts is good and molds are re-usable.

LOTS OF AIR— A porous carbon product made in blocks and sheets by Stackpole Carbon Co., St. Marys, Pa., is 75 per cent air, but it retains desirable carbon properties, such as high electrical conductivity, resistance to chemicals and stability at high temperatures. Despite porosity, extremely fine grain structure gives a large carbon surface area.

NEW ALLOY— "Our new aluminum alloy 66S (6066 under the designation system in STEEL's Aug. 9th issue) is a general-purpose material combining the high strength of copper series alloys with the good properties of 61S and 62S," says Harvey Aluminum, Torrance, Calif. Truck and trailer makers, manufacturers of trailers, aircraft, ships, farm implements and heavy construction equipment are using it in structurals.

MUFFLED ROUSTABOUTS—Lockheed Aircraft Corp. has converted its small handling units for in-plant roustabout work to propane fuel. Affected by the changeover are 120 gasoline-operated tow tractors and fork lifts, which are expected to run at a cost of $40,000 a year under previous costs. The aircraft builder says it will pay 60 per cent less for propane than for gasoline, change oil every 1000 hours instead of 50 to 100.

TEST FOR TITANIUM— Republic Steel is using the Reflectoscope for ultrasonic testing of titanium. Internal flaws in the metal affect movement of the ultrasonic waves; instrument shows flaws and their location. Republic has used the technique on steel for some time.

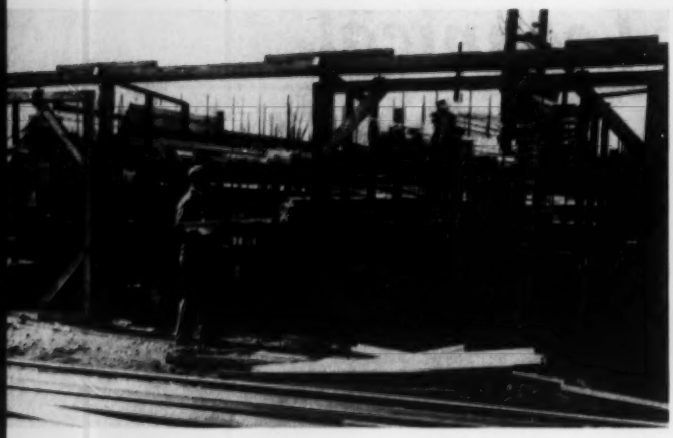
NICKEL POWDER—Pure nickel powder and by-product ammonium sulphate are produced in commercial quantities by a new chemical process. Sherritt Gordon Mines Ltd. and Chemical Construction Corp., a unit of American Cyanamid Co., are back of it.

WELDING TROUBLES—Use of argon gas instead of helium is suggested by Sylvania Electric as one method to overcome difficult starting or low voltage in a welding operation.

LOTS OF BOLTS— More than a million and a half high-strength bolts were used in place of rivets at the Pike County, Ohio, AEC plant. High first costs are offset by two factors: Crews are easily trained, and they are able to get a structure up in a hurry.

ALLOY PLATE— Tin Research Institute reports from England that tin-zinc alloy plated coatings are now used on a considerable proportion of refrigerators to protect mechanisms and internal fittings. Plate is also applied to steel parts for aircraft landing gear, to nuts and bolts and to brake mechanisms for autos and motor cycles.

Metalworking Outlook—p. 41 *Market Outlook—p. 139*



Truck bodies at Thompson come from stocked extruded shapes that can be stored outdoors in uncovered racks

Sides for the Borden insulated truck body are assembled in these fixtures. Here, workmen drill the rivet holes

CUSTOM TRUCK BODIES

Aluminum Makes Its Move

The light metal's competitive points include corrosion resistance, weight saving. But most significant is ease of fabrication through extruded, stocked shapes

FROM a secure position in the field of truck trailer construction, aluminum fabricators are surveying the custom-built truck body market. Since the number of these units built each year is in the hundreds of thousands, it's a market well worth attacking.

Aluminum has many strong points with which to compete for these orders. Included are its corrosion resistance, low maintenance and light weight. But most important continues to be ease of fabrication, by which natural workability combines with versatility of the extrusion process in making tailor-made extruded shapes readily available.

Standard Structurals — A good example of aluminum's adaptability to truck body production is provided by work at Thompson's Pikesville, Md., plant. This shop does an excellent job of taking advantage of standard extruded truck body shapes, warehouse-stocked items that can be purchased without die costs but eliminate numerous and expensive fabricating operations.

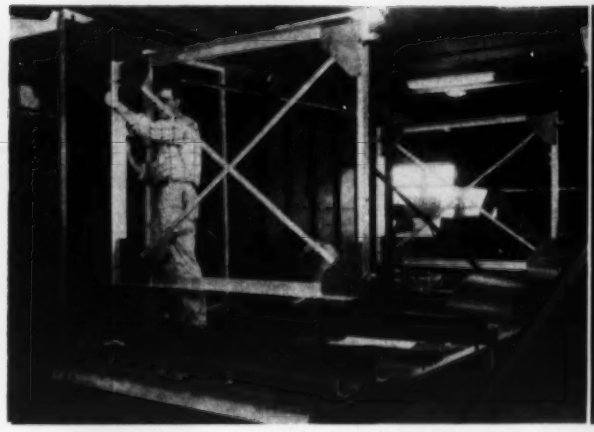
In Thompson's case, the complicated truck body structural components are produced in one piece by Aluminum Co. of America for use in constructing truck body skeletons. To this skeleton, aluminum sheet is joined to form an attractive but tough unit.

Production Sequence—A typical example of the production sequence is a refrigerated dairy products truck body built by Thompson for Borden Co. Production of the insulated body starts with assembly of the sides from aluminum sheet braced with a Z-shaped extruded section. The 51S aluminum alloy sheet section used in the side is made of two pieces of sheet joined along their length by automatic riveting.

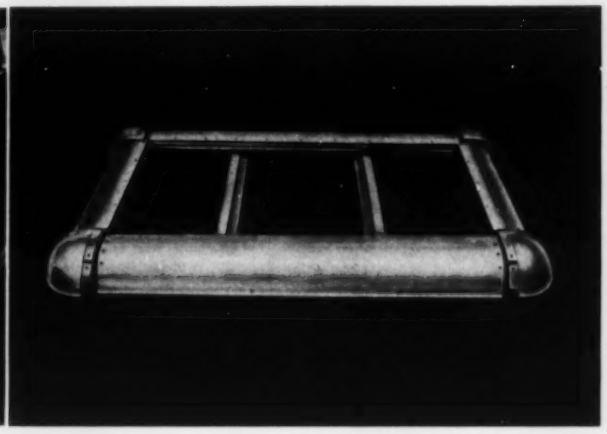
After riveting, sheet goes to a fixture where predrilled Z sections are added. The latter, standard aluminum shapes, act as the support members for the sides. Rivet holes are predrilled and serve as a jig for drilling through the sheet with a hand drill when side posts and sheet are mounted in the assembly fixture. Side assembly is completed by riveting corner sections, formed to a 6-inch radius, to the sheet.

Like the sides, truck body ends are assembled from sheet and extruded side posts. Side and end subassemblies are modified easily where doors are to be mounted.

Roof and Floor—Second major subassembly, the roof rail, is a shape that provides edge support for the roof as well as connecting surfaces for the sides and ends in



Final assembly of the Borden body is achieved with this fixture. Above, one side and the floor are being joined.



Above shows method used for roof assembly. Corner pieces are aluminum castings that fit roof rail side extrusion

By ROBERT E. S. THOMPSON
President, Thompson Trailer Corp.
Pikesville, Md.

Here's the production sequence of an aluminum electrical maintenance truck body, subassembly to completed body

final assembly. In the Borden body, support beams for the aluminum sheet roof are wooden bows, but aluminum extrusions are available where desired. Roof corners are aluminum castings designed especially to fit roof rail extrusions. All joining is achieved by riveting.

The floor, put together as part of final assembly, is built up using an Alcoa standard extruded 4-inch channel as principal structural member. In addition, several sizes of extruded aluminum alloy angles are used in the floor for bracing. Structural members are assembled with huck bolts, and the floor is completed.

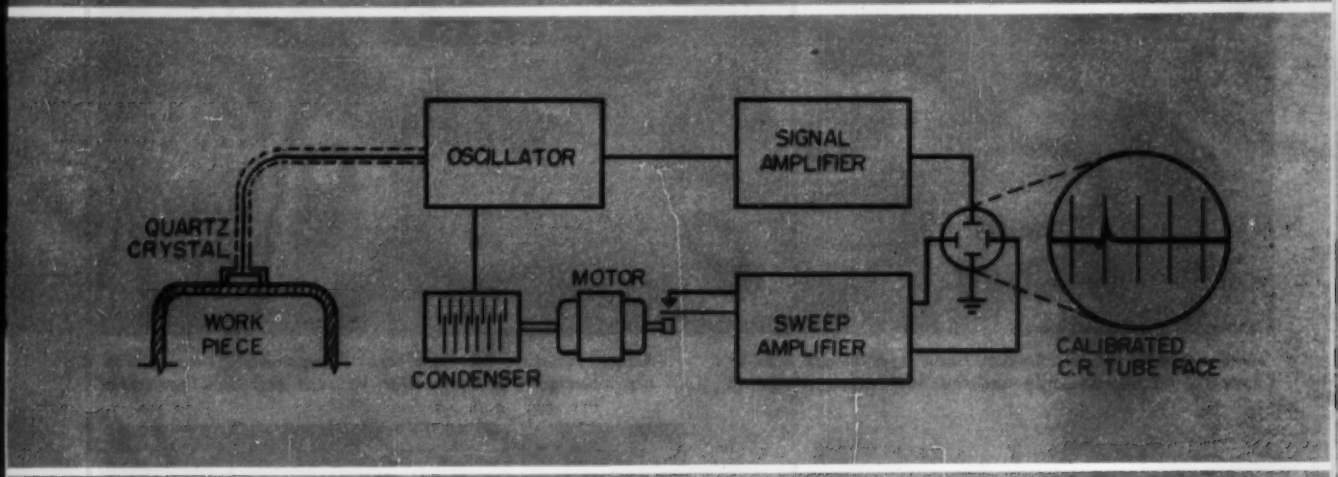
Final Assembly—As the floor is assembled, sides, roof and ends are combined in final assembly. To complete the job, side posts are riveted to floor support beams at the bottom; at the top, side and ends fit into the roof rail, to which they are joined with rivets. Although this completes the body's box shape, a rub-rail section of 52S sheet is added to the bottom edge for protection in event of scrape or bump.

Wheel box is built as a welded subassembly from aluminum plate and welded in place during final assembly. Doors used on the refrigerated body are made from brake-formed aluminum sheet and wood framing and hung at the same time. After application of interior insulation, the body gets a liner of aluminum alloy sheet with ribs formed integrally on a press brake.

Specialties—Thompson produces other specialty truck bodies, such as units for electrical and telephone maintenance trucks. The electrical maintenance body weighs about 800 pounds less than a steel body of the same type and size.

To build the maintenance truck, steps followed are generally the same as those for the refrigerated unit, with an interesting exception. This body has a sliding roof, fabricated from 61S alloy sheet. Edges of the rounded roof surface are flanged in a press brake to provide connecting surface for the sliding roof rail.

In another example of Thompson's work, an all-aluminum flatbed trailer, the two principal structural members are 16-inch I-beams. The beams are fabricated from four extruded angles and a section of 61S plate. Two angles are joined with huck bolts to each plate edge to form the built-up beam. This is a tough member to produce, but new larger extrusion presses employed by Alcoa will soon make an extruded I-beam available for this application.



Block diagram of ultrasonic testing equipment. Lack of bond will show up as "pip" on face of picture tube

Ultrasonic Test

Sound waves detect lack of bond in terms of thickness measurement. New method of inspection is expected to open up new uses for this type material

ULTRASONIC equipment that detects lack of bond is expected to encourage wider use of bonded materials.

Sound vibrations are beamed into the part as its surface is scanned by a crystal probe. Changes of thickness (indicating lack of bond) are recorded as "pips" on a TV-type picture tube.

The surface material must be a relatively good conductor of sound. When this layer is almost as thick as the entire bonded sandwich, little variation in thickness can be noted. Variation in acoustical properties of the materials used will also affect sound transmission. Materials with poor sound transmission properties present a problem unless they are in the backing material, but as backing materials, they may make detection of lack of bond easier.

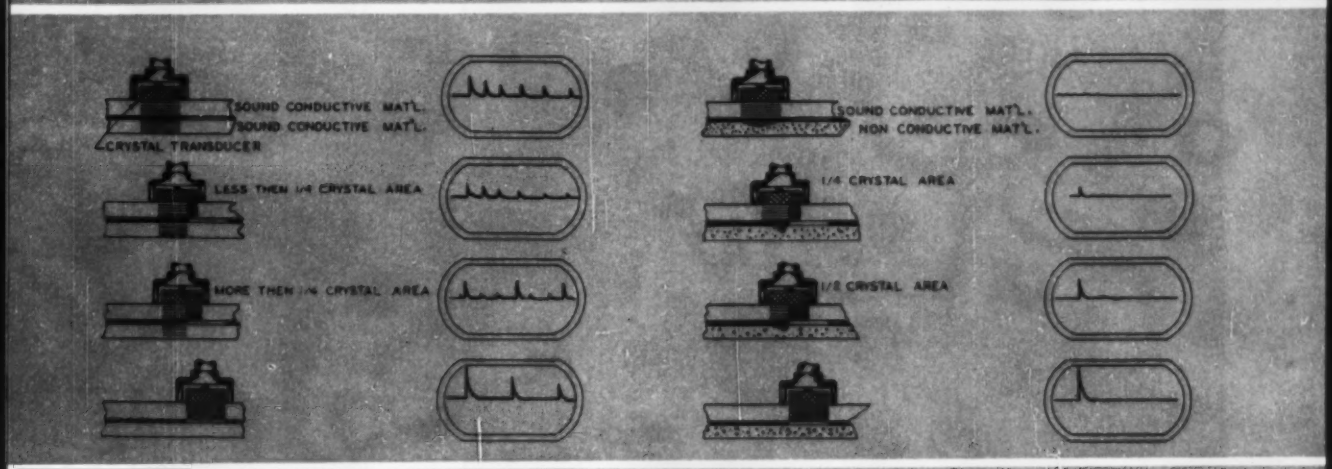
Applications—Mack Mfg. Corp., Plainfield, N. J., uses the method to check assembled brazed valve lifters for new truck engines. The valve body and a brazed Carboloy wear plate must have a sound bond to insure long life in the engine.

Lifters are placed in a metal rack in batches of 30. The operator puts a drop of oil on top of each valve lifter and then probes the surface of each one. Normally, there is little or no pip on the screen of the Magnaflux Sonizon.

Standards are set up by taking a known defective valve and setting the gain so that a pip height is reached that corresponds to the upper horizontal line on the picture screen. An arbitrary reference line is drawn below this standard; and valves that produce pip heights greater than the lower reference line are rejected.

The backing material does not conduct sound. Normal indication of good bond is lack of signal on the screen, but when the probe passes over an unbonded area, pip height may reach the top of the screen.

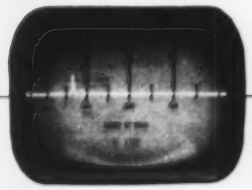
Another — Thompson Products Inc., Cleveland, regularly uses the technique on valves. An alloy steel tip is flash butt-welded to



Types of indication obtained from a defect where both the surface and backing materials will conduct sound

Here are indications obtained from a defect where the backing material used is a nonconductor of sound

For Bonding Flaws



the valve stem. The tip is chosen for maximum wear resistance, while the valve itself must be made of a material that will exhibit great resistance to heat and corrosion. After welding, valves are heat treated and given a semi-finished grind.

Valves arrive at inspection stations in boxes of 32. After applying couplant, operators pick up a valve at a time and place a hand-held probe against the valve tip. When a good valve is inspected, no pips of consequence are shown on the screen. When an unbonded area is probed, pips are of a height commensurate with the size of defect.

Thompson's quality control department has developed a set of standard valves with small areas that are improperly bonded and considered to be just on the border of being rejectable. A red crayon line was arbitrarily drawn ½ inch above the base line on the face of the screen. While probing the standard valve, the gain control on the instrument is set so that the pip just reaches the crayon line.

A valve with a rejectable defect produces a pip that extends above the reference line. Relatively untrained operators are able to do the job.

Thompson also ultrasonically inspects coated rough valve forgings. A hard facing material (about 0.050 inch thick) is puddled on valve heads and machined to curvature. Inspection is next.

If the pips are above the standard reference line, they are rejected for lack of bond in the coating.

Outlook — Automatic equipment has been devised to detect lack of bond in some symmetrical objects. Operation is simple. Automatic gating systems develop information on bond quality. Higher inspection speeds and greater accuracy result.

Adapted from a paper by G. B. Baumeister, engineer, special products department, Magnaflux Corp., Chicago, which was presented before the 57th annual meeting of the ASTM in June at Chicago.

Some idea of the variety of parts made with investment casting is shown here. Golf club head indicates sizes

Steel pattern die is filled with mercury which is then frozen at —40° F

Take A Close Look At

Don't be too quick to rule it out of your production plans. Initial casting may cost more, but savings can come from machining and assembly shortcuts

USE of investment castings should increase at least ten-fold within the next five years, predicts the Investment Casting Institute, official spokesman for an industry which enjoyed a sales volume totaling about $250 million in 1953.

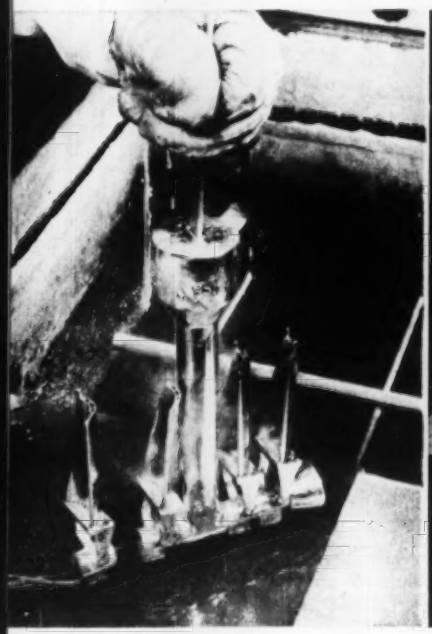
Critical need of industry for production of parts possessing complex and intricate contours and shapes that would be too costly to produce by other means has fostered this growth. Process also enables users to obtain parts with certain surface finishes that necessitate minimum subsequent machining, and it is likewise possible to cast non-machinable, non-forgeable alloys which possess severe service capabilities far exceeding common malleable metals.

Until now, some 90 per cent of investment casting has been used by defense industries, primarily the aircraft industry in the development of turbine engines. Other important defense applications have been found in the manufacture of electronic devices, oil line connectors, instrument and structural parts of all kinds, pneumatic piston components, etc.

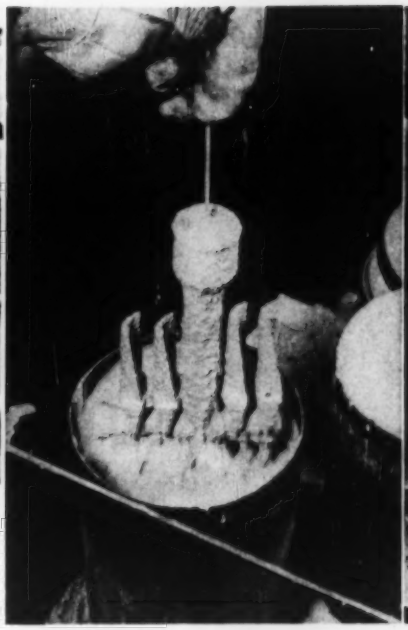
More Commercial Jobs—"Now," says the institute, "development of new technology and increased capacity, plus the leveling off of defense orders in some areas, make it possible to apply the benefits of the process to a greater percentage of commercial consumption."

The industrial process of investment casting utilizes, in addition to wax, both plastic and frozen mercury to form the expendable pattern. Wax and plastic are injected into the pattern mold in liquid form, then solidified to form the pattern; in the case of mercury, it is likewise injected as a liquid, then allowed to freeze to form the desired pattern.

Costs Deceiving — Too many companies reject the process with-



Then a cluster of mercury patterns is formed by pressing them together



Patterns are dipped in ceramic slurry until ⅛-inch shell is built up

And mercury is melted out leaving a perfect mold to receive molten metal

Investment Casting

out full knowledge of the cost of the original castings vs. the possible over-all economies, the institute believes. "When the entire cost of the finished part is considered, the true economy of the investment process is often startling," say institute spokesmen.

They point to an example, where with certain parts produced by other casting or molding methods, or often by fabrication, it may cost only 15 cents to produce the part itself. Subsequent machining may add another 30 cents. Thus the finished part costs 45 cents.

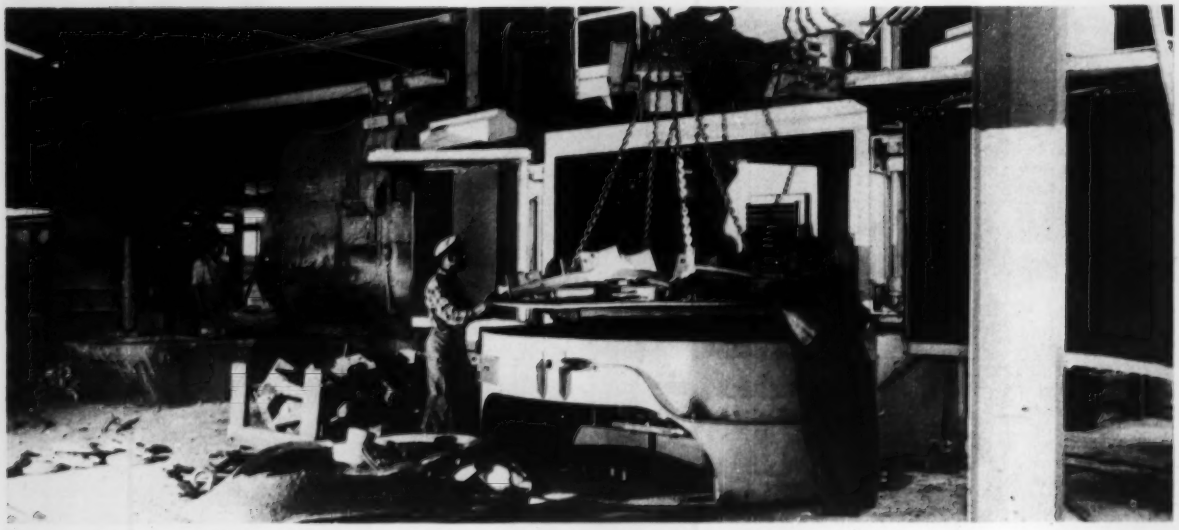
With investment casting, the original casting might cost 25 cents to produce, but subsequent machining may amount to only 10 cents. In this case, the finished part would cost 35 cents, or 10 cents less than other methods.

Nondefense Outlook — Ability of the process to produce whole assemblies that formerly were made in sections gives investment casting a rosy future. But whether for assemblies or somewhat simpler parts, units which have already been investment cast include locking and latch devices, sorting brackets, nozzles, funnels, brackets, bearing supports, glass mold dies, pump vanes and many others.

A builder of diesel engine superchargers, produces the turbine wheel by investment casting, not only because it eliminates much machining, but because he can design vanes that are thinner and more efficient.

Material cast is a Haynes alloy that withstands 1450° F exhaust temperatures and rpm's in the neighborhood of 40,000.

As a prime example of the effectiveness of the process, the institute points to the fact that even the hardest, most wear-resistant tool steels can be cast into intricate shapes that are finished to size.



Pallet load of cleaned parts is lifted from the machine while the next load is standing by. System has cut loading time to less than 5 minutes

Blast Cleaning on a Platter

Loads are served up for blast cleaning on steel pallets. Use of two discs permits positioning of parts for next load while machine is in operation

TWIN-PALLET loading of a blast finishing machine is racking up substantial savings for a Florida foundry. System, devised by the user, permits loading and unloading of parts on a pallet, while a second palletfull is in the machine.

Improved cleaning system at Florida Machine & Foundry Co., Jacksonville, has saved the company 13 manhours a day by reducing two chippers to one. Economical operation of the blast equipment also makes it possible to clean most of the castings direct from shake-out, before burning and chipping.

One to Get Ready—Instead of going along with standard practice of loading the blast-cleaning machine, starting the unit cycle and then unloading when the cycle is completed, management decided to utilize machine cycle time for preparing the next load.

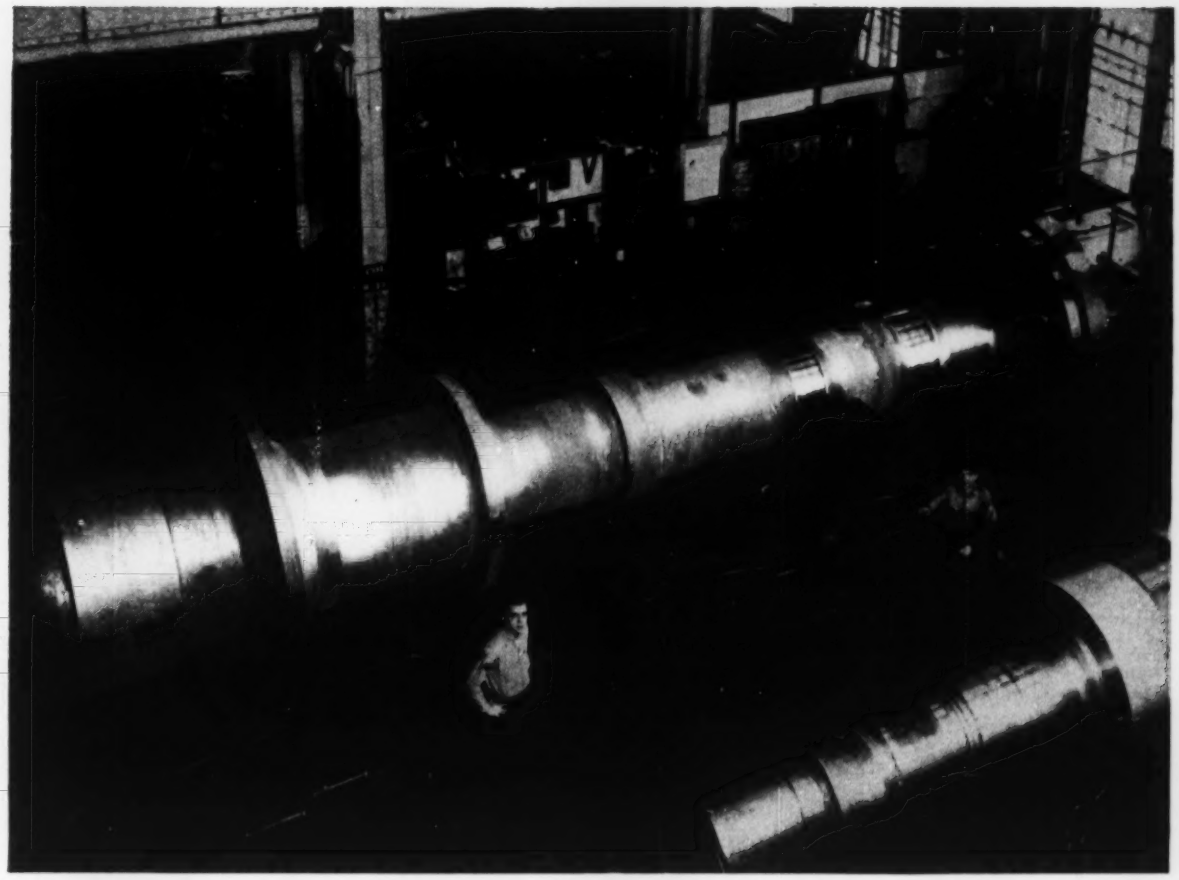
They devised two large cast-steel pallets which fit exactly on the turntable of the Pangborn LK turntable. One of these pallets is loaded, hoisted and positioned in the machine. Cleaning cycle is then started.

Double Time—While this load is being cleaned, the second pallet is loaded and made ready for positioning in the machine. Thus, they're using what had been operator idle time during the machine cycle—cleaning and loading on the same time.

According to Thomas W. Peacock, assistant superintendent, previous cleaning methods "required 24 hours a day, 6 days a week to keep pace with production. The new LK, with the two-pallet system, speeds cleaning so it can be completed in an 8-hour day and has cut our cleaning costs in half. Now we clean hard-to-clean steel castings for well under a penny a pound."

Job Size—Unit cleans at least 22,000 pounds a day, net weight. Table loads average 2000 to 5000 pounds. A typical load would be 18 of the company's root rake teeth at 200 pounds each—3600 pounds.

Blast time per load varies with the type of casting. Usually, it's 5 to 10 minutes for these steel castings. With the pallet system, it takes less than 5 minutes to get the next load in the machine and under blast.



THE TURNING POINT *for a Stronger Forging*

Product —
Hydro-electric Power Shaft

Overall Length —
34' 8½"

Body Diameter —
38½"

Flange Diameter —
96½"

Bore Diameter —
17"

. . . is not the machining of this 96-ton generator shaft, but the number of intricate forging operations performed by Midvale craftsmen. The 116" octagon ingot, poured at Midvale for this shaft, required a 14,000-ton press to exert tremendous pressures to upset and draw it out for full strength and toughness . . . especially the large thrust collar which is 96½" in diameter. Then after it was carefully worked to a rough shape it was put in this 100" lathe for machining and boring.

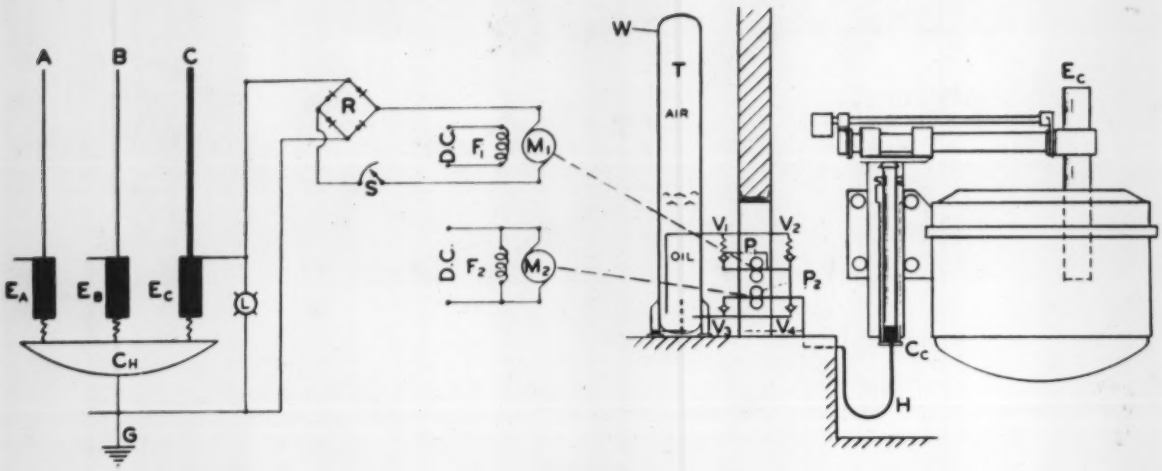
The same skill, care and proved-practices are used by Midvale forgers in making all Midvale forgings for steam turbine shafts, generator rotors, marine reduction gears, pinions and other heavy machinery parts. Quality tests confirm this skill and experience of Midvale steelmakers every step of the way from the furnace to finishing operation.

Have your engineers and designers specify Midvale forgings engineered and made for maximum service. Whether 300 or 300,000 pounds they are noted for their toughness, long service and never-failing performance. Write, wire or phone your forging problems to us. Midvale engineers are always at your service.

THE MIDVALE COMPANY- Nicetown, Philadelphia 40, Pa.
Offices: New York, Chicago, Pittsburgh, Washington, Cleveland, San Francisco

MIDVALE

FORGINGS, ROLLS, RINGS, CORROSION AND HEAT REISISTING CASTINGS



A, B, C — A, B, C phase buses from transformer.
E_A E_B E_C — Electrodes.
C_H — Burden in furnace.
G — Ground.
L — Light on operator's panel.
R — Rectifier.
S — Electrode current adjusting rheostat.
D.C. — Direct current supply.
M_1, M_2 — Electrode motors.
F_1, F_2 — Fields.
W — Air supply.
T — Air-oil tank.
V_1, V_2, V_3, V_4 — Valve cluster.
P_1, P_2 — Electrode pumps.
H — Anchor coupling hose.
C_C — Cylinder.

Operation of the Hydro-arc control is described in the accompanying article

Simplified Control

CURBS ARC FURNACE POWER APPETITES

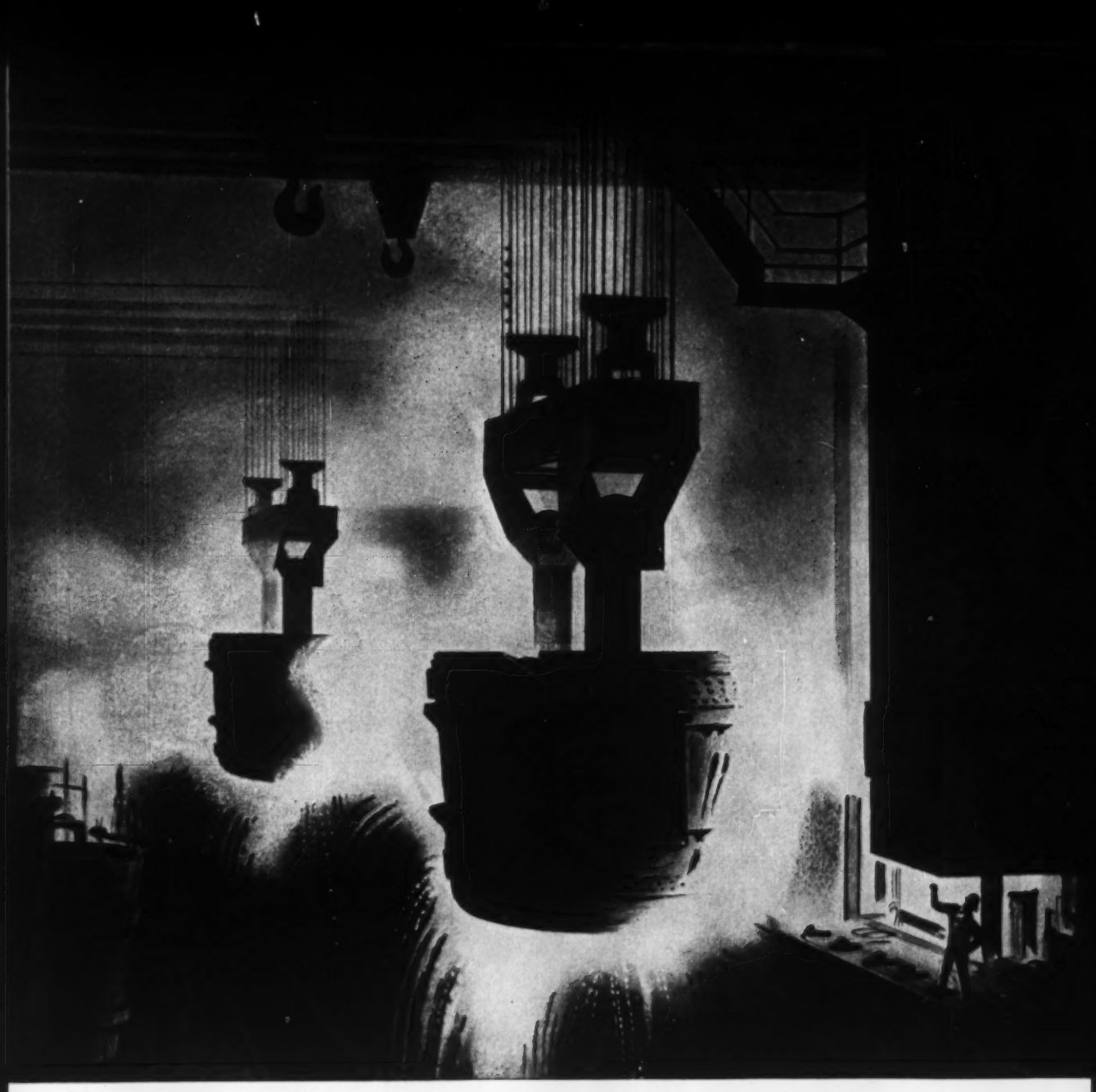
Departure from conventional system teams constant and variable speed electric pump motors. During normal operation, response time is less than three cycles, bus to electrode

HEART of any electric arc furnace control is the system for sampling the arc heat and sending that signal to the electrode moving device. Moving the electrodes up or down with speed and accuracy is the vital key to successful, lower-cost melting.

When a new system comes along, one that utilizes none of the previous regulation schemes—contactor, balanced beam, rotary-generator or electronics—it's bound to attract industry attention. Such is the case with Hydro-arc furnace control, developed by Whiting Corp., Harvey, Ill.

How It Works—System uses electrode motors that run only in one direction, motors that are energized directly from the furnace bus without any special generators, motors that regulate from rated speed instead of from a standstill. Best analogy is that of an automobile moving forward at 50 mph. This speed can be easily boosted to 60 or reduced to 40 mph. It would be a more difficult job to reverse the motions of the same car from 10 mph in one direction to 10 mph in the other.

By operating from a constant speed, the electrode motors can develop the additional increment of horsepower needed to do the work without being overworked and overheated. Referring to the drawing above, it can be seen that elec-



MORGANIZATION...way to cut costs

They expected a minimum of 20 years of service from the special-purpose Morgan crane we built for their steel mill. Already this steel company has received 39 years of service, almost double the expected life... and the end is still nowhere in sight. And, of course, the yearly expected cost of operating the crane has been reduced.

This is a typical result of "Morganization"... surveying, designing, building, and installing with the experience and *extra care* that make Morgan cranes and rolling mills and special equipment *last a lot longer*... and that make Morgan equipment cost less over those added years.

Write for booklet S-8, which describes "Morganization" and Morgan equipment for heavy service.

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THE MORGAN ENGINEERING COMPANY, ALLIANCE, OHIO

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Hamilton, Ontario

trode motor M_1 goes directly to the electrode for the energy to operate it. Inherent lag introduced by secondary current transformers in other systems is eliminated, as is a considerable amount of maintenance and complexity.

Production Results—Test operation of the new control over a six-month period at Kensington Steel Co., Chicago, has proved the time and cost saving aspects. Chief metallurgist, Joseph Seymour, reports that on an average 30-day operating period current consumption was reduced by 5.7 per cent, from 520 kwh per ton to 490 kwh per ton. Reduction in number and intensity of current deviations is also reported.

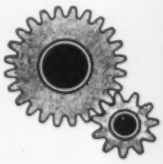
Maintenance requirements are greatly reduced, according to Mr. Seymour, and transformers run 10 to 15 degrees cooler. Increased speed of response, he feels, is responsibile for a 12 per cent reduction in refractory costs. Electrode consumption has neither increased nor decreased.

Even though Kensington's production schedule is not dependent on fast tap-to-tap, trial runs at capacity have shown that the new control effects a tap-to-tap of 95 minutes as compared with the former record of 115 minutes.

Hydraulic Drive—Actual movement of the electrodes is performed by an air-counterbalanced hydraulic drive. Motor M_2 (see drawing) is connected directly to pump P_2 which pumps liquid from the tank T at a constant rate to cylinder C_c. Motor M_1 is connected directly to pump P_1 and it pumps the the liquid away from cylinder C_c, returning it to the tank T.

When the two motors are running at the same speed, P_1 returns all of the output of pump P_2 and the electrode does not move. When motor M_1 slows down or speeds up, the difference in the output of the pumps either raises or lowers the electrodes.

Thus electrode action is controlled entirely by M_1. In turn, the speed of this motor is controlled by the amount the arc is "off balance." The constant speed motor, M_2, is the fixed standard against which this control regulates, and nothing happening within the furnace can upset it.



MACHINE TOPICS

BY R. F. HUBER, *Machine Tool Editor*

FASTER DEPRECIATION rates permitted by the new tax law will cause no immediate surge in machine tool sales. There's no evidence that orders were held up pending depreciation revision.

While the new law will make it easier for machine tool buyers to replace obsolescent equipment or to expand facilities, it will not cause them to discard buying tactics and practices tonight —to start wholesale purchasing tomorrow.

Takes Time—The new law will aid machine buying over the long pull. At the outset, it's a matter of accounting. As users get used to, and take advantage of, more liberal writeoffs, buying seems destined to increase.

Success will not come, however, until the advantages of the new writeoff allowances are a business concept with the men who will use them.

Survey — Emphasis was placed on the long-run benefits by both machine tool builders and users contacted for their opinions. None of the four thought there would be any change in immediate machine tool buying, which could be traced to the new law. They put it this way:

H. L. Tigges, executive vice president, Baker Brothers Inc., Toledo, and president, National Machine Tool Builders' Association: "I don't feel there will be any immediate effects. I think it's long range. In the first place, the users of machine tools have to know more about the tax law, study it, see its advantages and evaluate it in terms of their own business."

Russell L. Dustman, plant manager, Chevrolet-Cleveland Division, General Motors Corp.: "I doubt if (the new law) has any great effect on our machine tool buying . . . we keep a machine as long as it pays its way and until such a time as a newer, more modern machine would make more profit for us."

Charles J. Stilwell, president, Warner & Swasey Co., Cleveland: "I don't think there is going to be any explosion of new orders. I think, over the long-run, without any question, it is going to have an effect on machine tool orders and other heavy equipment."

Robert E. Lewis, president, Argus Cameras Inc., Ann Arbor, Mich.: "We don't have any conviction as to its having any great effect on whether we are going to buy more machinery. Obviously, we will give some thought as to what kind of a base we will use or what rate of depreciation we will apply."

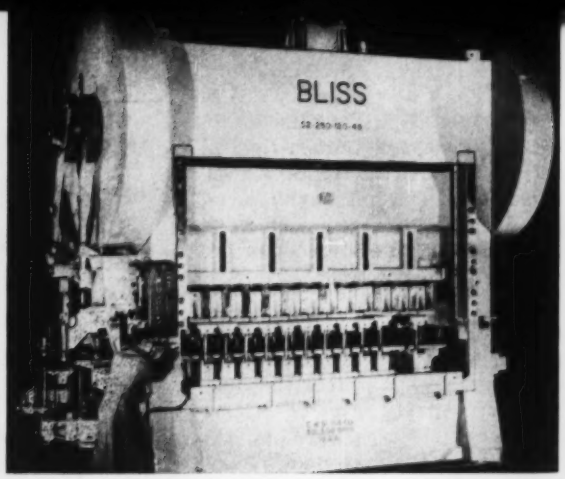
Earnings Are Up

Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., reports net earnings of $1,127,589 in the six months ending June 30, 1954, compared with $1,080,338 in the corresponding period of 1953.

Ralph J. Kraut, president and general manager, states: "Our operations in Fond du Lac continue at near capacity. Although our unfilled orders are approaching normal levels, these levels are well above pre-Korea. With good domestic peace-time business, continuation of some defense business, and improving foreign business, we look to the future with confidence."

Improved Transfer Press Goes Into Production

Press features a special stacking and feeding device, improved slide bar and finger transfer. Electric controls guard against malfunctioning



Straight side double crank press has 120 x 48-inch bed, single geared with twin drive, powered by 50-hp motor

ATTENTION accorded the automatic factory and the hard facts of higher labor and material costs means transfer feed presses are in for a new look.

One of these units, a huge press featuring special stacking and feeding device has been developed by E. W. Bliss Co., Canton, and installed in the Ypsilanti, Mich., plant of Ford Motor Co.

Method Old, Feed New — The transfer feed principle is over 60 years old, but the method of feed and transferring stock, or blanks, to this machine is new. Two cams and yokes attached to the main crankshafts drive the specially-designed automatic transfer feed mechanism. A plunger with a rubber vacuum cup descends to pick up a pre-cut blank. It rises to deliver the blank to the fingers. If the plunger does not deliver, a limit switch stops the press.

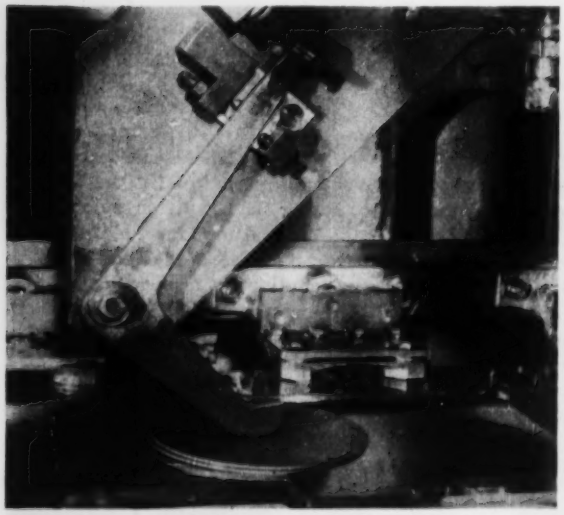
As the supply of blanks is exhausted, a limit switch at the lower end of plunger stroke is tripped and an elevator pushes a new stack into feed position. When the elevator descends it trips a switch, a motor starts and turns a 6-station turret to the next full station of blanks.

Case of Double Blank—Another microswitch in the feed line prevents double blanks from reaching the dies and damaging the press. If two stick together they trip the switch and actuate a solenoid which opens a trap door, through which the blanks fall. The press goes on uninterrupted. This is important in maintaining production schedules effectively.

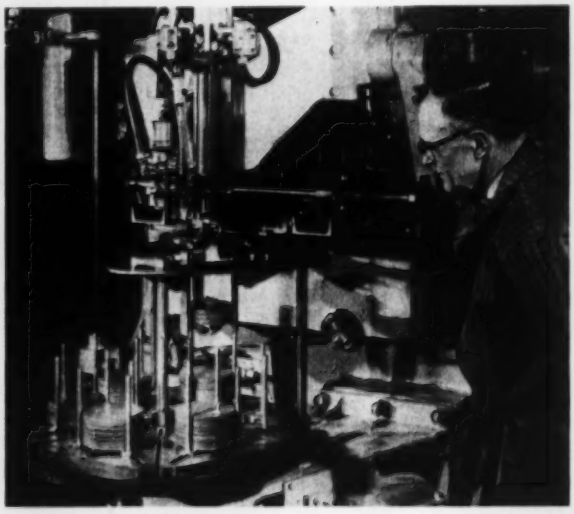
An equally important feature of the design is the flexibility of the feed and transfer mechanism to accommodate similar type stampings that require successive or progressive steps or operations.

End Result—Thus by feeding itself, checking and correcting misfeed, performing eleven separate press operations and by delivering up to 28 completed starter parts per minute, this press speeds up production and cuts the cost of manufacturing this part, which was formerly die cast.

Body Build—Built to Joint Industry Conference specification, this 250-ton, 13-station press has a centralized control panel which is provided with interlocks to guard against accidents.



Feeler detects double blank, rejecting it through trap door. This allows uninterrupted production of parts



Automatic feed mechanism picks up one load of blanks from 6-station turret and raises them to feed position

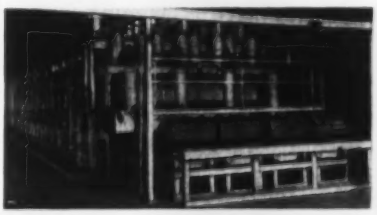
How to Select the Most Economical Insulating Firebrick

The advantages of lightweight insulating firebrick over ordinary "heavyweight" firebrick are generally known to furnace operators and furnace builders. But many buyers have wondered just what advantages there might be in one brand of insulating firebrick as against another. The answer to this question could very well mean savings in fuel costs, increased furnace output, longer life . . . or all three.

One furnace builder ran tests on their small electric kilns where heat input could be measured with great accuracy. Here's what they found: B&W IFB required 25% less heat than any other brand of insulating firebrick they tried.

The reason? B&W IFB are lighter in weight than any other insulating firebrick — they contain more tiny, insulating air cells. Heavier, denser insulating firebrick linings waste fuel two ways: They soak up and store more heat which is lost when the furnace is cooled; and they conduct more heat through the walls.

How about long life? One of the

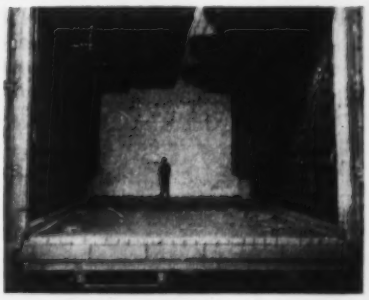


toughest tests of firebrick is in the lining of a carbon monoxide furnace. Some brands last only a few weeks, then disintegrate, due to iron oxide impurities in the brick which react with the gas.

But B&W Insulating Firebrick contain little iron oxide, and they're processed at high temperatures so that any traces of iron oxide form stable compounds. So instead of deteriorating they stay on the job year after year —in many cases over 10 years.

Another factor, important to many furnace operators, is accurate temperature control. Here again B&W IFB have an advantage over other insulating firebrick. First, because B&W IFB are lighter in weight they store and conduct less heat—and they respond more quickly to changes in heat input.

A typical example is the giant stress-relieving furnace shown below—sixty feet by twenty-two feet by seventeen feet high. The B&W lining plays a vital part in holding the desired temperature within 5 degrees accuracy!



Next time you buy or specify insulating firebrick, remember that the lightest weight brick of all—B&W—has the highest insulation value, the longest life and the greatest furnace heat controllability.

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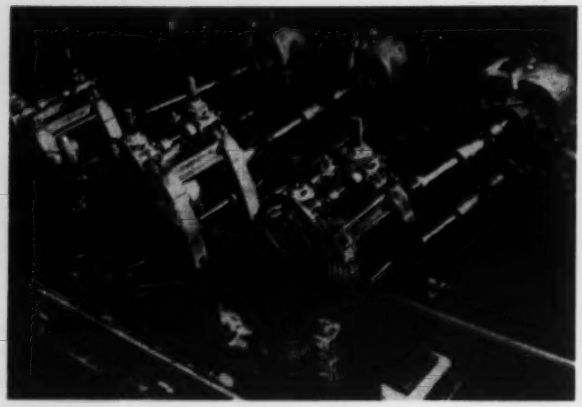
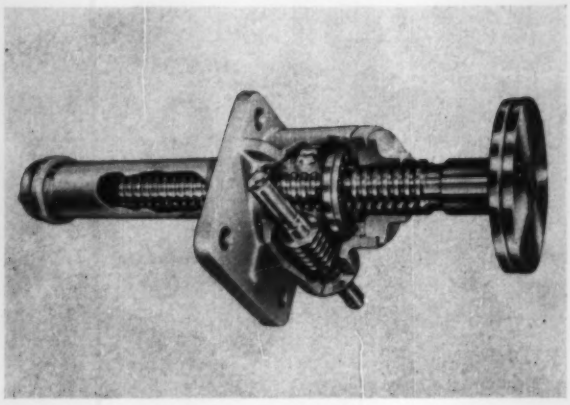




Worm gear jacks are used to adjust forming, feed and electrode sizing rolls on this Yoder mill. At right is the standard Duff-Norton jack

MACHINE POSITIONING

Special Jacks Lighten Adjustment Load

Used singly or in multiples, operated manually or by remote control, worm gear jacks usually can be integrated with equipment after only slight modification

ADJUSTMENT and positioning of metalworking machinery, a traditional backbreaker for engineers and maintenance men, is being done with relative ease by a versatile worm gear jack.

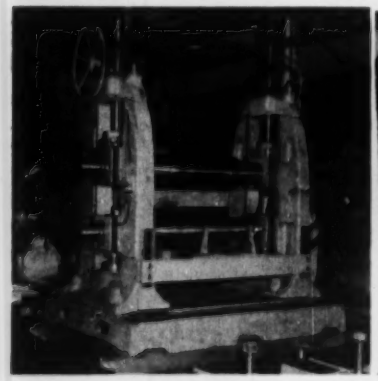
The jack is used singly for such applications as stabilizing and leveling mobile units or lifting crane wheels off runways for servicing jobs. Used in multiples, jacks are connected by shafting and miter gear boxes to get perfectly uniform elevation.

Tube Mill—One example is found in application at Yoder Co., Cleveland, where the company uses 24 worm gear jacks on its 5½-inch tube mill to adjust forming, electrode, feed and sizing rolls. Jacks are connected by shafting and operated by handwheel.

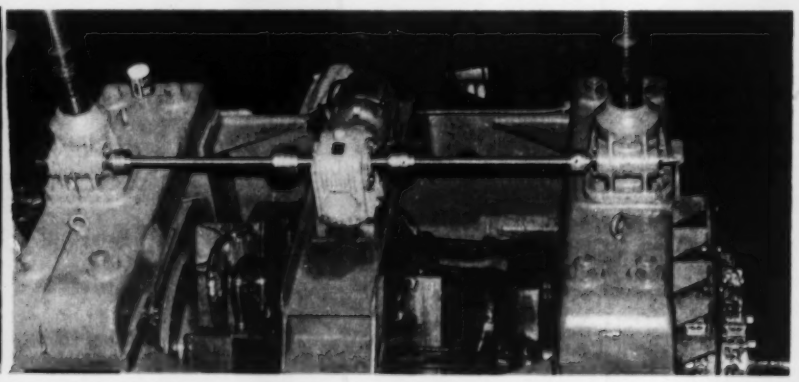
Another profitable installation is one made at Wm. K. Stamets Co., Pittsburgh, on pipe threading and cutoff machines. The pipe mill manufacturer formerly elevated threading machine tables by adjustable wedges to accommodate different pipe sizes. But over a wide pipe range, wedges were unwieldy. So instead of raising and lowering the table, Stamets installed the jack on the machine itself. With table stable, only the machine center is raised or lowered.

Yoder first used the jack on its resistance tube welder to raise and lower the welding rotor. Since then, it has installed jacks on forming mills, levelers, reducing mills and other equipment to adjust roll shafts.

Capacity, Ratios—Worm gear jacks also can be power-driven and operated by remote control. Duff-Norton Mfg. Co., the builder,

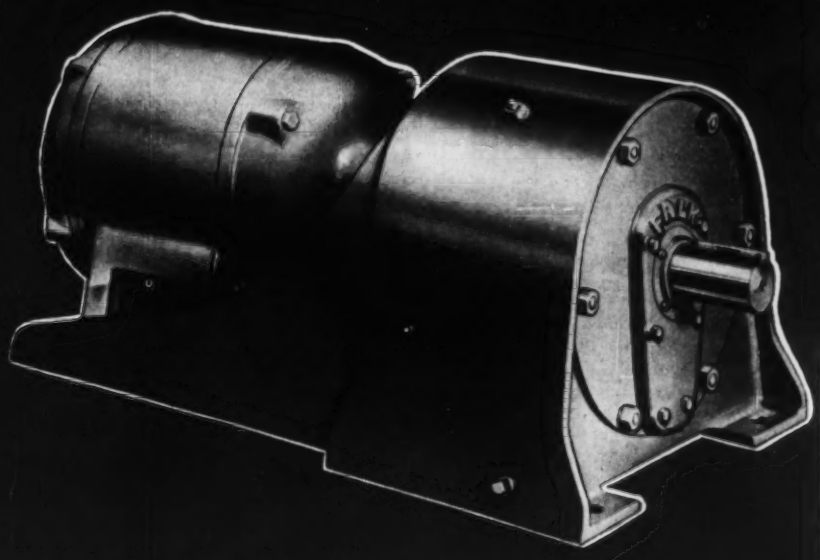


Ready for installation is this feed pass stand, employing two worm gear jacks. Operation of jacks is by hand crank



Two worm gear jacks are utilized to raise and lower the welding rotor of this Yoder resistance-type tube welder

Choose the All-Motor type,



...with complete foot-mounted motor of ANY make ANY type ANY speed

Every FALK motoreducer has these "IN-BUILT" FACTORS

1 **All-steel Housings.** Unbreakable, strong, rigid. Generous overhung load capacities provided by wide bearing spans, large shafts and bearings.

2 **Streamlined inside and outside.** Smooth, clean surfaces; machine welded construction conforms to NEMA motor frames.

3 **Sealed Housings.** Dual closures and one-way vents keep oil *in*, dust and moisture *out*. Units are splashproof, leakproof, dustproof.

4 **Positive Lubrication.** Large sump capacity ...oil-tight construction assures clean lubricant...direct dip of revolving elements provides positive lubrication at all speeds.

5 **Wide Speed Range.** Selective ratio combinations provide output speeds from 1.5 rpm to 1430 rpm with stock gears.

6 **Precision Gearing.** Heat-treated alloy steel, precision cut and shaved helical gearing throughout...quiet-operating crown shaved pinions...taper bored gears for easy ratio changes.

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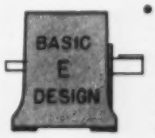
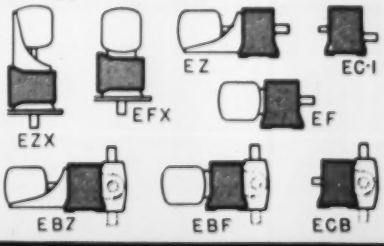


The basic E design permits maximum use of standardized parts . . . closer control over materials, processing, inspection and assembly . . . resulting in faster delivery from interchangeable stocked assemblies.



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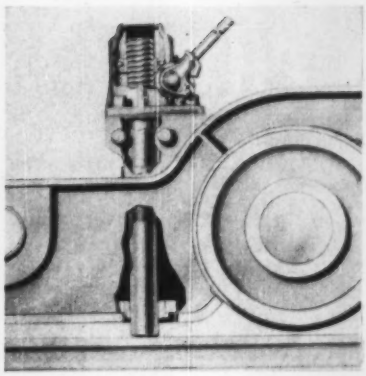


A few modifications of an overhead crane's structural members are required to integrate jack assembly

makes a standard model with 5 to 50-ton capacity and worm gear ratios of 6¾ to 1 to 32 to 1. They can also be engineered to specifications in every facet of operation, from capacity to length of screw.

With slight modification, jacks can be integrated as a permanent part of almost any piece of equipment.

No Guesswork—In a remote application, William M. Bailey Co., Pittsburgh, found the worm gear jack an asset on its blast furnace mud guns. Bailey uses the jack to replace a link formerly employed to raise and lower the gun nozzle. The link had to be loosened manually and the nozzle adjusted to proper position by six men—a job that took 30 minutes.

The jack eliminates all guesswork in the operation. The nozzle is elevated to the proper point in a matter of seconds by remote control. One man makes the adjustment.

Thickness Adjustment—United Engineering & Foundry Co. employs the technique on slab and bloom shears, tandem cold mills and for positioning leveler and deflector rollers. On down and upcut slab and bloom shears, a jack presets a control valve, which in turn varies travel of top shear head so it can be adjusted for various thicknesses.

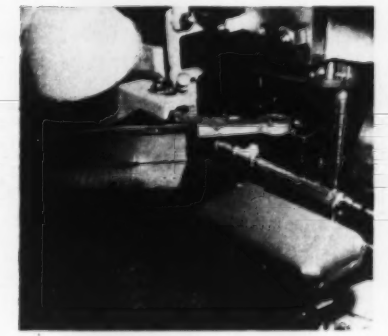
This adjustment is motor-operated from the shear operator's pulpit and replaces manual valve adjustments. Because of the inconvenience involved, manual adjustments frequently were not made.

Automatic Feed Press

ECONOMY in labor, plus safety, are attained by application of V & O Feed-o-matic devices for small stampings made by International Business Machines Corp.

In the setup shown below, the part is a latch that includes a hub boss coined in a prior operation. A central hole is used for location over a pin on a horizontal indexing dial from which a swinging arm picks up the workpiece.

Arm Operation — As the arm moves over the stamping, it is sucked into a recess by a partial vacuum, after which the arm



FEED-O-MATIC DEVICE
. . . transfer latch speeds output

swings between die halves and deposits the blank in correct position for trimming and shaving. The arm swings back again, ready to pick up the next piece before the die closes.

Motions are automatic and so rapid that 9000 stampings are completed per 8-hour shift as against 2500 for hand loading. Only one stamping per cycle can be picked up. If prior stamping has not been ejected, the press will stop.

Safety First — The operator merely loads the dial, and hands are well away from the die. A sweep, made largely of rubber, swings over the dial just before the pickup arm moves to pick up the stamping and will push the operator's hand away without injury if it's in the way.

Interlock between press and swinging arm moves them in correct timed relation. Any failure to function results in stopping the press until mechanical difficulty is corrected.

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Over 1000 HEX STYLES produced

Over 100 SQUARE STYLES produced

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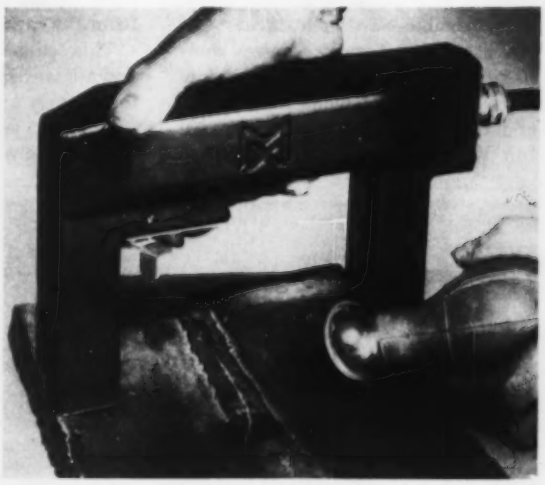
Inspection Techniques

Radioisotope Inspection for Dense Materials

LOW-COST system of using radioisotopes in industry has been developed to inspect dense materials up to 8 inches thick. The machine is a product of Gamma Industries Inc., passes radioactive rays through a dense article where they strike photographic emulsions in holders behind the test object. The film reveals a shadow picture of the specimen and its internal structure. The machine, in addition to its function in standard radiographic exposure, is capable of four other radiographic techniques: Protruded source, panoramic, penstock and stereo. Unit is supplied with five Curies of cobalt 60, equivalent to about 7500 milligrams of radium. The model A gamma rays machine weighs 47 pounds, can be carried easily to remote areas for on-the-spot testing. The heavier B and C models may be rolled into operating position. Tests indicate technicians are exposed to less radiation in three months' work than they would be during a single medical fluoroscopic examination. The equipment should be profitable for products in which internal conditions must meet high test standards.

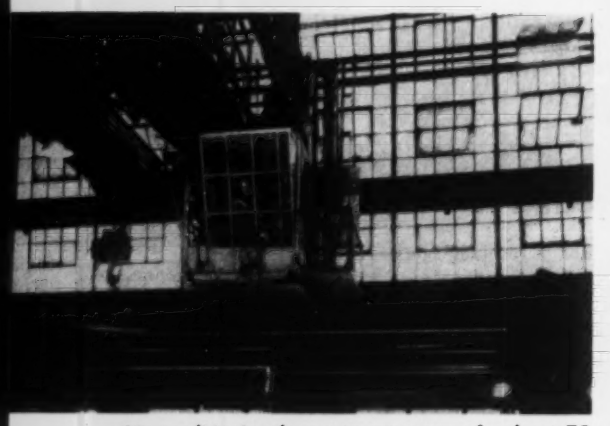
Magnetic Particles for Surface Cracks

MAGNETIC particle inspection kit, a 30-pound unit developed by Magnaflux Corp., is portable, achieves low-cost preventive maintenance, weld inspection and limited-volume inspection of any magnetic part where surface cracks are suspected. The U-5 Yoke kit employs ac magnetization, develops no subsurface indications. One man does the job, handling yoke power control and positioning with one hand, dusting on powder with the other. Area covered by each application varies, with maximum about 24 sq in. Kit's metal carrying case is about the size of an average fishing tackle box. A 100-foot input chord means flexible operation. It draws 6 amps from any 110-v ac line. Valuable preventive maintenance applications should occur on traveling cranes, structural items and new welds.



Comparison Standard for Curved Surfaces

CYLINDRICAL surface roughness scales are designed as a standard of comparison by sight and touch for internal and external curved surfaces. Built by General Electric Co.'s Instrument Department, the device consists of two scales each 6 inches wide and 2 inches long. It's ideal for determining roughness of surfaces produced by grinding, lapping, honing, superfinishing, etc. Scale No. 1 is capable of determining surface roughness of ten specific surfaces, examples being those produced by grinding, lapping or honing and superfinishing in the 4, 8, 16, 32 and 63-microinch categories. On scale No. 2, typical surfaces such as those produced by lathe and screw machine operations in the 16, 32, 63 and 250-microinch values, are represented by turned as well as bored surfaces. Surface roughness on both scales is specified by numbers stamped on the units' sides, the arithmetic average deviation from the mean surface in microinches. Result of the scales should be to provide an objective reference by which engineers and draftsmen can designate roughness and appearance.



Air conditioning keeps temperature of cab at 75 to 85° F for continuous ventilation and comfort

Air Conditioned Crane Cab

High temperatures over the special dome-type ovens and fumes ceased to annoy operator with installation of crane cab air conditioners

HEAT AND FUMES had dire effects on men working in heat-treating areas at Taylor Forge & Pipe Works. Temperatures are constantly around 140 to 160° F and soar much higher when the ovens are opened to remove heated forgings.

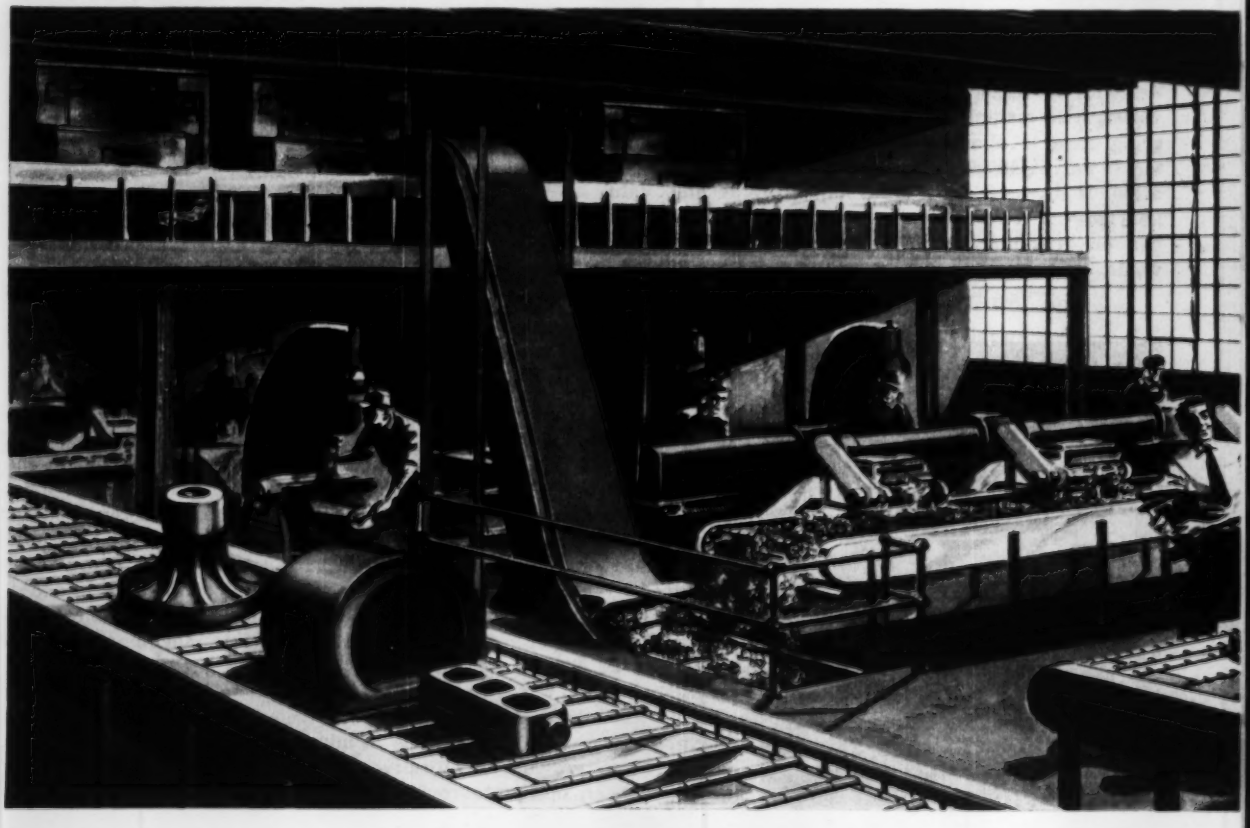
Intolerable—To heat-treat and stress-relieve forgings, the company developed a special dome-type oven. The ovens are opened and the forgings removed by a 10-ton Whiting Tiger crane, subjecting the cab to heat up to 1000 to 1100° F while working directly over the opened oven. The crane cab was enclosed so the operator got some relief, but even so, he could work only long enough to remove material from the oven; then he had to get out for relief from the heat.

This caused considerable crane down-time and operator discomfort.

Another source of discomfort for the operator came from oil firing during the winter months. Fume conditions over the ovens became almost intolerable.

What They Did—Then came the decision to air condition the cab with a Dravo Corp. model C-3V crane cab conditioner. The conditioner has a 3-ton cooling capacity, with continuous ventilation, dust, dirt, gas, fume and odor removal.

Result: It is now possible to increase the heat load in this area without worry as to its effects.



Paper Weight Tote Boxes

New look in plant facilities was carried out in paper tote-boxes. Of moisture resistant solid fiberboard they are lighter, stackable

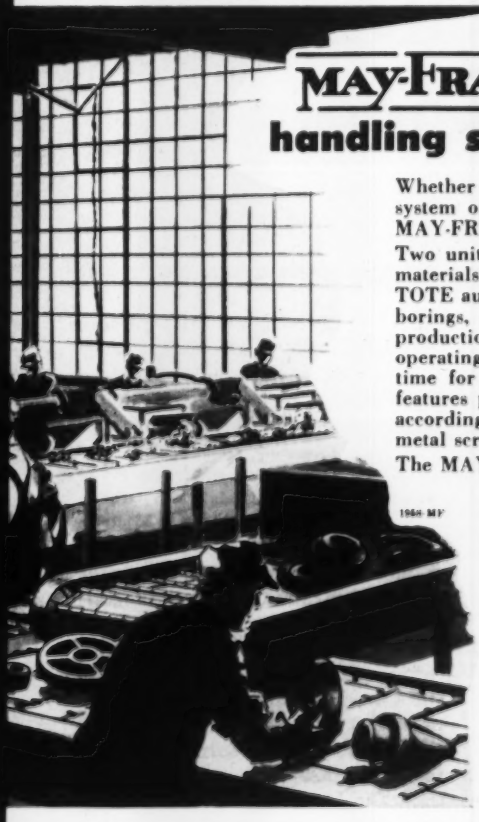
Instrument parts are handled in fiber tote boxes, found lightweight, inexpensive and good looking

ADDING TO FACILITIES for assembling precision instruments, Sagamo Electric Co. has gone all out for the "new look." A suitable color scheme was chosen; wires were enclosed in ducts, under the floor; acoustical ceilings incorporated the latest in fluorescent lighting; walls are tile and air conditioning makes working conditions ideal. They have even gone so far as to give their tote boxes a face-lifting.

Nested — The company decided to try Gaylord Corp. paper tote box made of moisture-resistant solid fiberboard. The construction of the box includes a stepped-back protruding bottom section permitting one unit to be nested into another. Strength and rigidity are accomplished by use of a wire reinforcement which is built in the top rim.

Size of the Sagamo tote box was determined by the dimensions of the storage shelves with three boxes 18 inches deep completely occupying one shelf from back to front. They are shipped by Gaylord knocked-down and are assembled with a power stitcher as needed.

From the warehousing point of view, the fiber boxes lend themselves quite well to stacking as they do not bend out of shape and they present few limitations as to stacking and palletizing. And aside from their utility, the officials also feel that they dress up the entire operation.



MAY-FRAN gives you greater economies in handling scrap and heavy abrasive materials

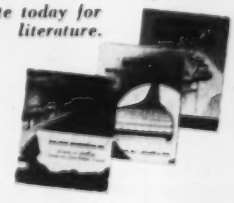
Whether you need a complete plant-wide system or a single scrap handling unit, MAY-FRAN can meet your requirements.

Two units form a complete MAY-FRAN materials handling assembly. The CHIP-TOTE automatic scrap conveyor removes borings, turnings and chips from high production machine tools while they are operating . . . thus eliminating shut-down time for manual scrap removal. Design features permit flexibility of installation according to type of machine tool, kind of metal scrap, rate of removal, etc.

The MAY-FRAN Hinged Steel Conveyor Belt transports scrap and heavy abrasive material to the disposal point. Precision formed, heavy gauge hinged-steel links are connected in horizontal rows by means of high-carbon steel rods. Side chains become an integral part of the belt, and outside links incorporate interlocking wings which remain positively engaged at all times. Link and rod construction eliminates fall-through.

For full utilization of vital machinery and skilled manpower, mechanize your handling of scrap and heavy abrasive materials with a MAY-FRAN automatic system.

Write today for literature.

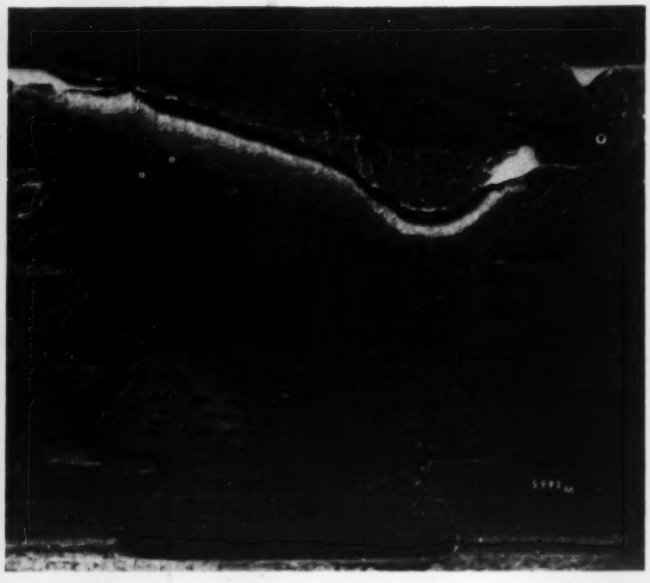


MAY-FRAN ENGINEERING, INC.

Designers and Builders of Complete Handling Systems

1725 CLARKSTONE RD. • CLEVELAND 12, OHIO

Stress rupture machine for testing notched specimens, showing universal joints for reduction of eccentricity



Here is a typical brittle fracture — test at 1300°F, under 8800-pound load. Time to rupture was 519 hours

Stress Concentrations . . .

Take Toll in Creep Loading

It's now recognized that the effects of stress concentrations, such as those resulting from notches, may be impossible to predict from conventional tests on smooth specimens

By G. SACHS
Director of Metallurgical Research
Syracuse University Institute of Industrial Research

and

D. P. NEWMAN and W. F. BROWN JR.
Research Metallurgists
NACA, Lewis Flight Propulsion Laboratory, Cleveland

STUDY of service failures of flange bolts on steam boilers several years ago revealed that stress concentrations could weaken materials subjected to creep loading. Heat-treated steel bolts often broke prematurely in a brittle manner at the threads or shoulders.

A number of investigators and the steam and gas turbine industry in particular were quick to recognize the problem.

In its work in this field, NACA carefully analyzes four variables: 1. Temperature of test. 2. Time to failure (considered a more basic variable than applied stress). 3. Geometry of the notch and 4. Effect of alloy composition.

Highlights — It appears that notch sensitivity is associated with some internal changes in the metal structure that accompany heating —such as precipitation.

The premise is borne out with work on a low-alloy, Cr-Mo-V, bolting steel. Time to rupture was limited to 1000 hours. It was found the lower the test temperature, the longer the time to notch

sensitivity and the larger is the weakening effect.

Earlier investigations were carried out at 932° F, with time going up to nearly 100,000 hours. Generally, where notch sensitivity was found at this temperature, it developed gradually, with increasing time to a maximum, then faded out completely at sufficiently long times to failure.

Criteria—Notch sensitivity can be expected and notch tests should be made when (1) smooth-bar ductilities decrease rapidly with increasing time to rupture and (2) when the smooth-bar ductilities are less than 1 or 2 per cent.

Freedom from notch weakening can be expected when the smooth-bar ductilities are high (above 40 per cent) and remain constant or continuously increase with increasing rupture time.

Geometry—Apparently, effects of notch sharpness on notch-strength ratio are fundamentally the same for stress-rupture tests as for notch-tensile tests at room temperatures.

If materials are notch-ductile, notch strength increases with increasing notch sharpness up to a maximum value, then decreases only slightly with further increases in notch sharpness.

Less is known of the effects of notch depth. Notch-tensile tests at room temperatures show that the ratio of the notch to smooth bar strength of notch-ductile materials increases continuously with increasing depth to a maximum value, then may decrease slightly.

Notch-sensitive alloys exhibit initial strengthening, but then develop a pronounced minimum in the notch-strength ratio at a critical depth—value depends on the alloy. Further increase in notch depth results in further increase of the notch-strength ratio.

Alloys, Structures—Alloys and different metallurgical structures of the same composition (produced by different thermal or mechanical means) respond variously to the presence of a given initial stress concentration in stress-rupture tests.

There is insufficient published notch-stress-rupture data to allow definite conclusions regarding the effects of heat treatment. One investigator reports that a Cr-Ni-Mo steel is extremely notch sensitive in the oil quenched and tempered condition. While if the same steel is spheroidized, it has considerably lower smooth-bar strength but is notch ductile under identical testing conditions.

Smooth-bar ductility of a similar steel was drastically reduced by variations in normalizing temperature—the 1000-hour elongation dropped from 6 per cent for a normalizing temperature of 1750° F to zero at a normalizing temperature of 1850° F. Similar embrittlement has been found in other low-alloy steels, particularly when the normalizing temperature approaches the austenite-grain-coarsening temperature.

Composition—NACA Investigators recently looked at a number of alloys to find the effect of chemical composition on notch-rupture sensitivity. Each alloy was given the manufacturer's recommended heat treatment. They found low-alloy and ferritic stainless steels behave essentially the same. While the magnitude and critical temperature range of notch sensitivity vary with the alloy, the temperature at which notch sensitivity is found shifts to lower values with increasing time to rupture. In general, low-alloy steels show notch embrittlement at lower temperatures than ferritic stainless steels.

An austenitic alloy, Inconel X, exhibits a strong notch sensitivity between 1292°F and 1382°F which gradually fades out at higher temperatures. In contrast with other alloys, the temperature at which the notch sensitivity of Inconel X disappears is only slightly influenced by the time to rupture; and its notch strength is nearly independent of temperature within its range of service application.

Conclusions — Magnitude of notch weakening and temperature range are strongly dependent on alloy composition. For all materials observed, notch rupture sensitivity appears to be time-temperature dependent. There is a striking similarity between time-temperature effects in notch rupture testing and the time-temperature dependence of the tensile properties of age-hardening alloys.

There is also a distinct parallelism between the trends of the notch rupture strength ratio and the notch and smooth bar-ductilities over wide ranges of time and temperature.

In all cases investigated, notch weakening was associated with extremely low values of notch ductility. So notch sensitivity may be ascribed primarily to the retention of all or part of the initial elastic stress concentration.

It was also found that there is a parallelism between the effects of geometrical variables in notch rupture tests and those observed in notch tensile tests at room temperature.

Finally, scattered information available indicates that notch rupture sensitivity should be greatly dependent upon the thermal and mechanical history of an alloy.

Bearing for High Mill Load

Outer cage and roller complement of four-row cylindrical bearing is removed from slushing tank at SKF Industries Inc. The largest multi-row cylindrical bearing built by SKF, the unit meets problems of high mill loads and precision rolling at high speeds

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Original article was abstracted from a paper by G. Sachs, W. F. Brown Jr. and D. P. Newman that appeared in the Zeit. f. Metallkunde. Its title: *Die Wirkung von Spannungskonzentrationen auf die Zeitstandfestigkeit der Werkstoffe.*

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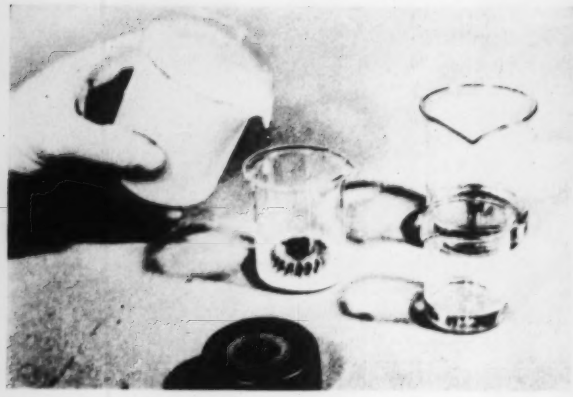
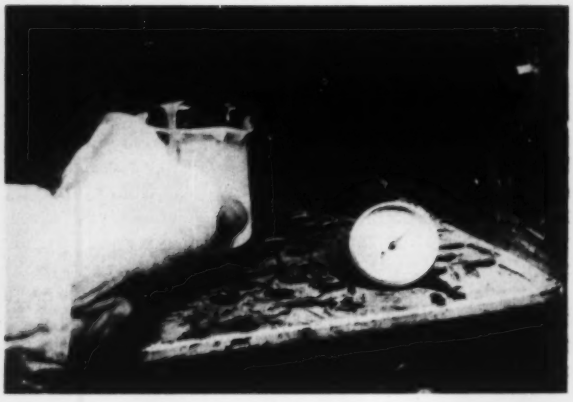


First, pour plastisol around gear



Then cure at 350°F for 15 to 20 minutes

FLEXIBLE MOLDS

Cast Intricate Parts Economically

FLEXIBLE MOLDS are proving a fast and economical method for reproducing intricate machine parts. The technique, employing vinyl resin-base plastisol, permits extensive production runs at a minimum cost for molds.

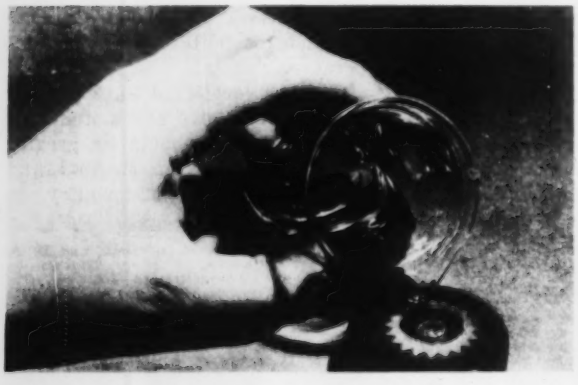
Responsible for development of the method is Houghton Laboratories Inc., Olean, N. Y. Work was done largely through combination of useful properties of Bakelite epoxy and vinyl resins. Low temperature cure and low shrinkage of the epoxies eliminate considerable mold heating equipment cost.

Average Run—About five castings, on the average, can be made from a single flexible mold. Simpler forms may have higher runs, but a limit is set by gradual extraction of plasticizer from the mold. For an average-size casting, about 100 molds can be made with a gallon of vinyl resin-base plastisol. Cost of the plastisol is $10.

Two Steps—According to Bakelite, any professional workshop or lab can make the molds in two steps. First, pour plastisol around the object to be reproduced and cure it at 350°F for 15 to 20 minutes. Container for the plastisol should allow about ¼-inch of space around the object to form the mold.

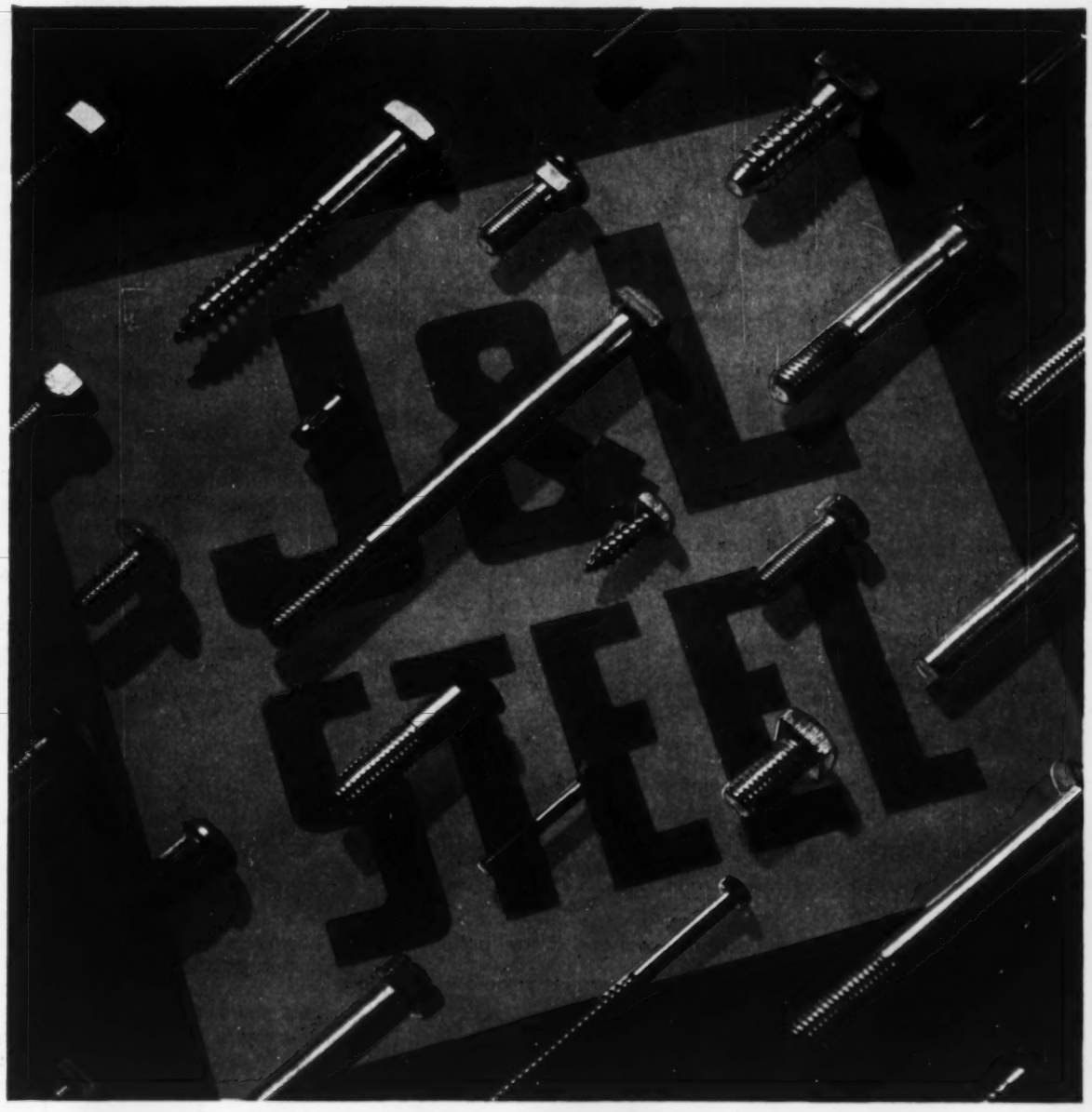
Second step is to fill the mold cavity vacated by original mold pattern with cold-setting epoxy resin. Houghton's Hysol 6020 is formulated with a Bakelite epoxy resin and hardener to set at room temperature. It gels in 1 to 3 hours, hardens up to 3 hours later at room temperature. Finished part then is popped easily out of the flexible mold, which requires no release agent.

Tolerances — Mold tolerances can be kept within ±0.005-inch. However, the process is not applicable to casting precision parts because stresses set up by chemical reaction cause residual shrinkage in the mold.



Next, pour epoxy resin into cavity

After hardening, strip part from mold



Get Production, Economy, Quality with J&L Cold Heading Wire

More and more profit-conscious wire users are turning to J&L for Cold Heading Wire that helps them get increased production, top quality and operating economy. They've found that J&L furnishes wire with—

- **High Plastic Deformation**
- **The Right Finish**
- **High Cold Malleability**
- **The Utmost Uniformity**

. . . in other words cold heading wire that consistently has the right chemical and physical properties.

The dependability of J&L Cold Heading Wire is the result of quality control from ore to finished product, rigid testing, modern equipment and over a hundred years of iron and steel-making experience.

Contact J&L and investigate the economies of using J&L Cold Heading Wire in your operation. Remember, it's tops in quality—competitive in price.

Jones & Laughlin

STEEL CORPORATION — *Pittsburgh*

Experience is A Grand Old Teacher But it has to be used to be Appreciated

TROXIDE

DRY ACID SALT REPLACEMENT FOR SULFURIC ACID

Acid Fumes—Eliminate acid fumes by installing Troxide which is a granular dry salt acid containing inhibitors.

Corrosion—Eliminate corrosion to pickling equipment and surrounding equipment. Reduce duct work and blowers.

Safety—Eliminate hazards of handling liquid acids. Troxide can be handled with no safety equipment.

Storage—Eliminate carboy storage problems. Troxide is packed in 400 pound fiber drums. Reduce freight charges.

Disposal—Eliminate acid disposal and stream pollution. Troxide solutions have gone as long as two years before dumping.

Performance—Troxide salts, when dissolved in water, react similarly to Sulfuric Acid for pickling scale, rust and oxides from metals. Troxide produces uniform pickling either etching or non-etching—depending upon type used. The pickled surface is clean and bright. An excellent base for bonding plated deposits, vitreous enamels or organic coatings.

Free TECHNICAL INFORMATION

- METAL CLEANERS
- COPPER PLATING PROCESSES
- STEEL BLACKENING SALTS
- PLATING PROCESSES for ALUMINUM
- METAL STRIPPERS
- CHEMICAL METAL POLISHES
- PHOSPHATING COMPOUNDS
- PAINT STRIPPERS
- PICKLING AIDS
- ALDIP METAL TREATING SALTS

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Micro-Porosity Elimination

IMPROVED IMPREGNATION precludes air or fluid leaks in cabin-pressurizing and air-cooling equipment necessary to today's modern aircraft. Efficiency of such vital components depends on complete pressure tightness, which means that micro-porosity, present in all cast metals, must be completely and permanently eliminated.

A method developed by American Metaseal Mfg. Corp. is being used successfully by Stratos Division of Fairchild Engine & Airplane Corp.

One-Man Job—The process satisfies the requirements of MIL-I-6869 and uses a batch-type vacuum-pressure method designed for simple one-man operation. Castings are placed in an autoclave. Air is removed from the autoclave, evacuating any pore connected to surface of casting.

The impregnant is introduced to the autoclave and compressed air applied to force it into the evacuated pores. Pressure is released, castings are removed from the autoclave and cleaned. A curing operation solidifies the liquid impregnant absorbed into the metal structure.

Heart of the Matter—The heart of the system used by Stratos is a self-contained Hub Unit comprising autoclaves, high-vacuum pump, thermostatically-controlled wash tanks, a mechanical surging unit and a power operated hoist. It occupies less than 40 sq ft exclusive of the baking oven and is built around a center hub which mechanizes all functions.

ONE MAN OPERATES UNIT
. . . hub mechanizes all functions

NEW PRODUCTS and equipment

Reply card on page 137 will bring you free literature, editorial clips or more infomation on new products and equipment described or advesertised in this issue

Automatic Loader

. . . cycle time: 2 seconds

A universal floor-type automatic loader for presses and vertical spindle machine tools is essentially a motor-driven loader which

has two arms that are rotated through 120-degree motions. It picks up parts one at a time from a conveyor line, deposits them in press or machine tool and unloads onto another conveyor in a total cycle time of 2 seconds. Loaders can also be equipped with a single arm and act as press-to-press loaders, automatically handling parts from one press to another in a line. Hautau Engineering Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 1

Speed-Reduction Units

. . . shafts in vertical position

Vertical Shaft-King speed reducers are shaft-mounted units designed for applications where the driven machine shaft is in a vertical position or nearly so. The units, available from stock, can be supplied in both 13 to 1 and 20 to 1 ratios for requirements through 42 hp.

Both ball and tapered-roller bearings are used where they best serve the purpose. A three-wall, internally-ribbed cast-iron housing

provides permanent gear and bearing alignment. American Pulley Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 2

Steel Bins

. . . small parts positioning

Hopper-front steel bins for positioning a variety of small parts at the use-point, called Work-O-Matic

parts bins, are made in seven sizes. Vertical containers are equipped with hanger angles, so they can be hung on a wall behind a work bench or on a framework. If set on a work bench, they occupy less than half the space ordinary tote pans require.

Seven sizes measure 6 inches from front to back on bottom and top. Hopper front is 3 inches deep, making parts easily accessible. Largest bin is 18 inches wide and 24 inches high. Smallest unit measures only 6 inches in height and width. Union Metal Mfg. Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 3

Carburizing Furnace

. . . push-button operated

Push-button control, automatic quenching cycle and positive control of temperature and atmosphere uniformity are features of this gas carburizing furnace.

A feature called the Sunbeam Stewar Autocarb eliminates forever messy, expensive salt pot cyaniding and pack carburizing, and improves ordinary furnace hardening processes. Sunbeam Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 4

Buffing Wheel

. . . eliminates break-in time

An improved metal-finishing buffing wheel cuts faster than the company's former models and

wears 30 per cent longer. According to test runs, the new buff practically eliminates break-in time.

The Binderized Ruff-L-Buff is

impregnated with the same organic material used as a binder in buffing compounds, permitting thread ends to retain the compound more easily and in larger quantities. They are available in a wide variety of plys and weights with outside diameters of 12, 14, and 18 inches. Non-standard sizes may be had on request. Hanson-Van Winkle-Munning Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 5

Cloth Belt

. . . removes stainless stock

These 50-inch-wide Resinwet cloth belts, resin water-proof type, are excellent for removing stain-

less steel stock. They are safe and effective because they use water as a coolant, according to the manufacturer.

Water coolant method eliminates fire hazards caused from sparks. It also eliminates oil conditions caused by the use of petroleum-base coolants. Michigan Abrasive Co.

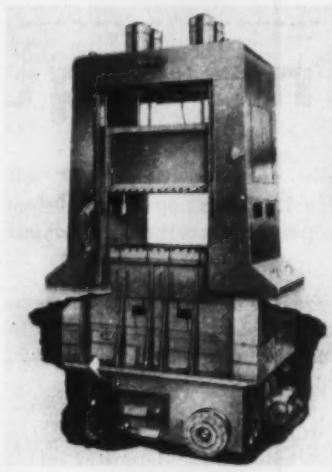
FOR MORE DATA CIRCLE REPLY CARD NO. 6

Underdrive Press

. . . capacity: 450 tons

The U4-450-84-60 four-point underdrive press, double geared, twin drive, arranged with air counterbalance to the slide and air brake on the flywheel is equipped with a dynamic clutch and is arranged with pneumatic cushions in the bed.

This type of press design minimizes press height on production floor, providing better lighting and



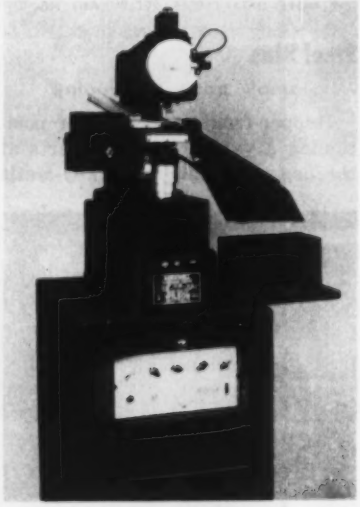
more freedom of material flow. The press has a stroke of 20 inches, a 60 x 80-inch slide and bed area and a capacity of 450 tons. Cleveland Punch & Shear Works Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 7

Hardness Tester

. . . to 1200 tests an hour

A fully automatic Rockwell hardness tester, operating on the identical principle of the hand-operated tester, is capable of performing between 1000 and 1200 tests per



hour. Pieces to be tested are power fed into the tester and automatically placed in position beneath a diamond penetration. Hardness is recorded on a dial.

The unit has a control which regulates the up and down travel of the elevating screw so that it is not necessary to have all the pieces the same thickness for automatic testing. Classifying is done by means of photoelectric units mounted on the bezel rings of the dial gage. American Chain & Cable Co. Inc.

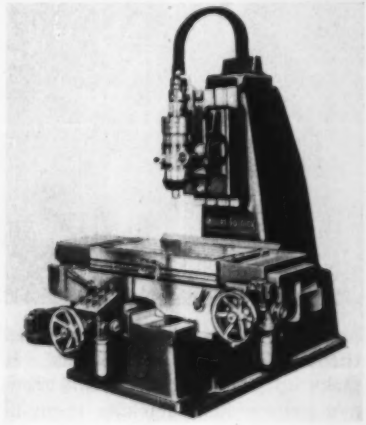
FOR MORE DATA CIRCLE REPLY CARD NO. 8

Jig Grinder

. . . with positioning table

Moore-Fosdick jig grinder combines the Moore jig grinding head with the Fosdick automatic positioning table. Table automatically positions work to ± 0.0001 inch.

Machine will grind cylindrical as well as conical holes with tapers in either direction. An angular in-



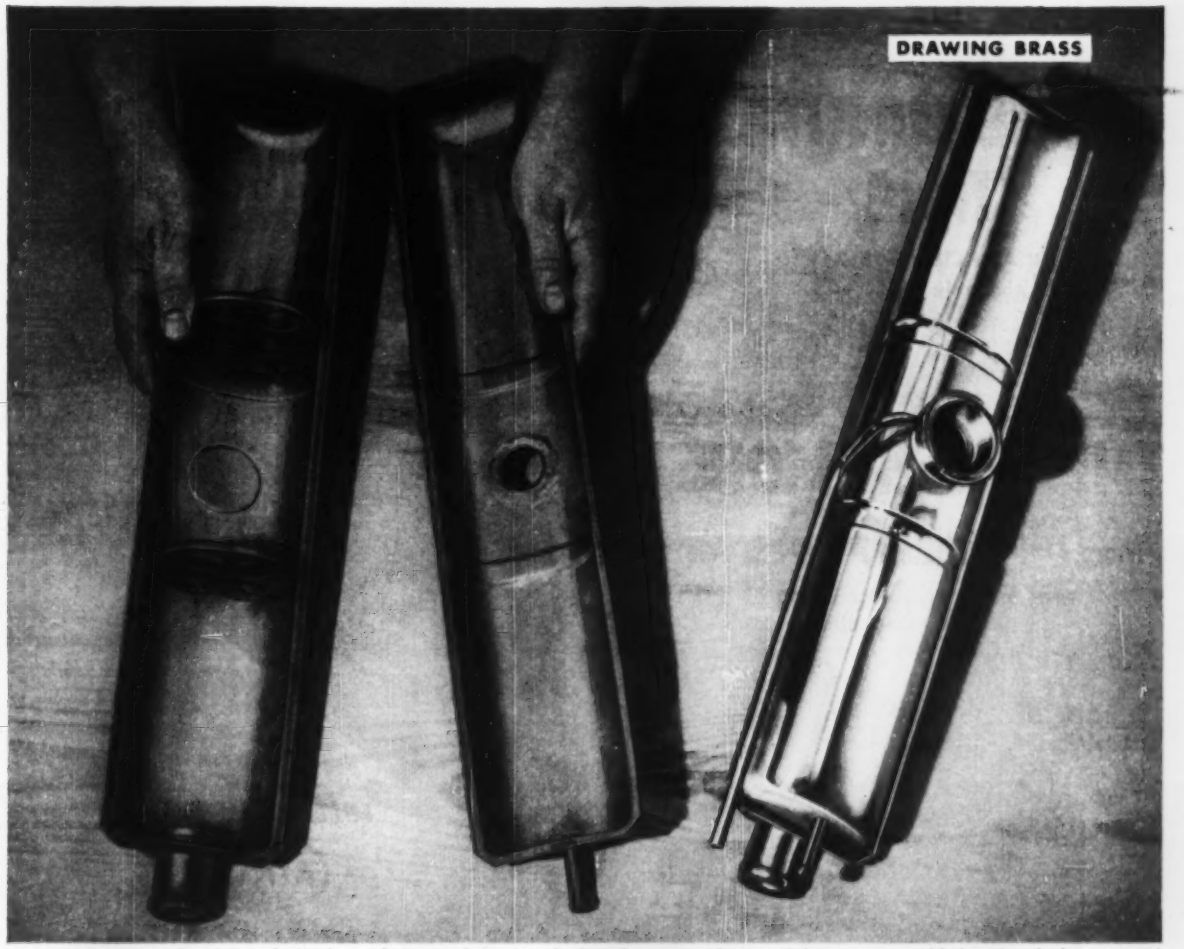
dexing device built into the main spindle and the newly developed slot grinding attachment permit quick, accurate grinding of any contour, regular or irregular. Grinding speeds run from 12,000 to 60,000 rpm. Fosdick Machine Tool Co.

FOR MORE DATA CIRCLE RTPLY CARD NO. 9

Platform Truck

. . . for various heights, skids

A 6000-pound capacity low lift platform truck has a height in the low position of 7 inches, permitting it to handle skids with legs only 7½ inches high. The vehicle also has 10 inches of platform lift so skids with legs up to 14 inches high can also be accommodated. Variation of approxi-



RADIATOR TANK made of Formbrite shown before polishing and after chromium plating. Halves are assembled with a lock seam and soldered together with baffles inside. Intake spout, overflow tube and connecting fitting are also attached.

New fine-grain drawing brass cuts rejects from 13% to under 1%

These radiator tanks—used in a leading sports car—were first made of ordinary drawing brass.

But Morrison Steel Products Company, Buffalo, N. Y., found this brass wasn't stiff enough after forming. During handling, polishing and plating, many dents and nicks appeared on the surface. Rejects ran at about 13%.

Then Morrison turned to Formbrite* – Anaconda's new fine-grain drawing brass. Here's what happened.

1. Rejects dropped to less than 1%.
2. Appearance of the final plated tank (very important in a sports car) was so much improved that now Formbrite is specified for all these tanks.
3. Polishing costs were sliced almost in half.

WHY MORRISON FOUND FORMBRITE BETTER, CHEAPER TO USE

Formbrite has a superfine grain. Produced by special methods of rolling and annealing, this grain is *so fine* that often a simple color buff brings it to a bright, lustrous finish. (Compare magnification of Formbrite Drawing Brass with that of ordinary drawing brass. At right.)

Formbrite is harder, stiffer, springier and more scratch-resistant. It resists denting and deforming. Yet Formbrite is surprisingly ductile . . . readily stamped, formed, drawn and embossed. And Formbrite plates beautifully.

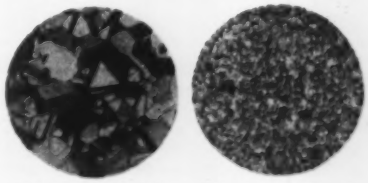
NO EXTRA COST

Premium price for this premium metal? Not at all. Formbrite costs not a penny more than ordinary drawing brass. It comes in sheets, strips and coils—in all commercial widths and gages.

FREE SAMPLE

The way to find out about Formbrite is to try it yourself. Ask for a sample and more information. Just write to: *The American Brass Co., Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.*

*Reg. U. S. Pat. Off. 5187



75x magnification of ordinary drawing brass.

75x magnification of superfine-grain Formbrite.

Formbrite

FINE-GRAIN DRAWING BRASS
an ANACONDA® product

Made by
THE AMERICAN BRASS COMPANY

IN ONE MINUTE'S TIME

AWS Class E-6012 electrode produced this fillet

THIS MUCH MORE WELD

was made in the same time in the same steel plate

with the new

AIRCO®

EASYARC 12

Airco's new EASYARC 12 actually welds mild steel in about half the time it takes with conventional AWS Class E-6012 and E-6013 electrodes. EASYARC 12 has a completely new type of flux coat that contains a high proportion of powdered metal. This lets you use higher currents without breakdown of the coating, and vastly increases deposition rates, since the flux itself adds metal to the weld.

Besides being fast, EASYARC 12 is far easier to handle. Welds are made by "dragging" the electrode along the joint. Spatter is almost negligible. And EASYARC 12's slag is practically self-cleaning.

For complete information and prices — get in touch with your Airco office or dealer right now.

Actual length of welds: E-6012 — 5-1/16", Easyarc 12 — 12". Current settings: 230 amps AC for E-6012; 275 amps AC for Easyarc 12. Both welds made in 1/4" plate with 3/16" dia. electrodes.

AIR REDUCTION

60 East 42nd Street • New York 17, N. Y.

at the frontiers of progress you'll find...

Divisions of Air Reduction Company, Incorporated, with offices and dealers in most principal cities

Air Reduction Sales Company
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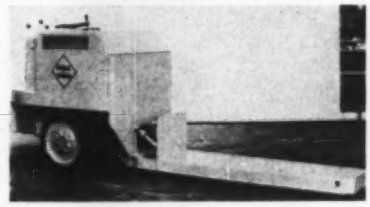
Represented Internationally by
Airco Company International

Foreign Subsidiaries: Air Reduction Canada Limited, Cuban Air Products Corporation

mately 9 inches provides for maximum flexibility.

Wheels are articulated for travel over rough or uneven floors. The



truck is operated by an Elwell-Parker Rolotac snap-acting control designed for maximum current carrying capacity with minimum maintenance. Elwell-Parker Electric Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 10

Whiteprint Machine

. . . for continuous operation

Ozalid Division's model 800 will reproduce translucent engineering drawings and business forms up to 42 inches wide at speeds up to 30 fpm. It offers front or rear delivery, will be continuous in operation.

An electronic speed drive per-

mits instant changes to any speed from 8 inches to 30 fpm. A wattage stabilizer maintains constant printing speeds by compensating for voltage fluctuations within the 200 to 240-v range. Prints are stacked and collated at a front adjustable receiving tray. General Aniline & Film Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 11

Coolant Development

. . . cuts cutting temps lower

A new discovery in cutting fluids has enabled the development of a product reported to have a cooling power sufficient to reduce cutting temperatures 300 degrees below the conventional coolants. TL-131 is said to enable the cutting of many tougher metals which conventional soluble oils cannot handle.

Low surface tension of the wetting agents aids the flow of coolant to work point, decreasing heat buildup in tools and heat check in grinding. The coolant's strong polar attraction to metal causes it to seek out and cling to tool chip interfaces providing positive lubrication in critical areas, yet it drains quickly, minimizing carry-off and buildup. Johnsons' Wax Co.

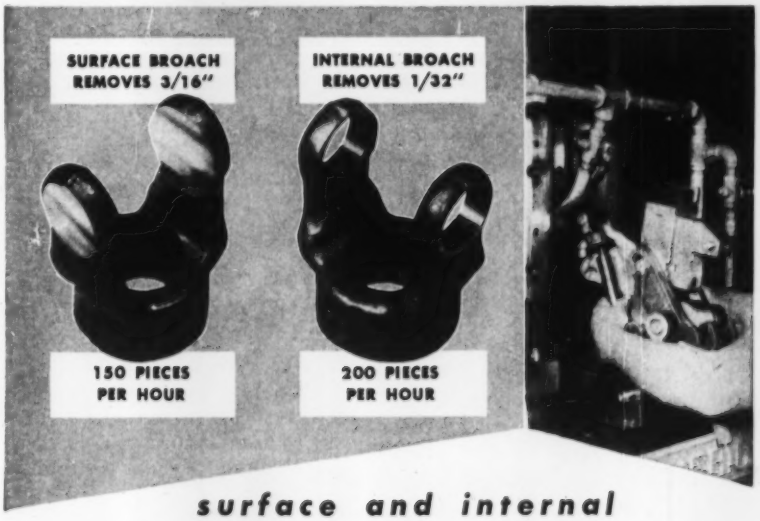
FOR MORE DATA CIRCLE REPLY CARD NO. 12

Electric Generating Plant

. . . to MSP specifications

A light weight (140 pound) 21-hp engine, one of first of this

one *American* broaching machine

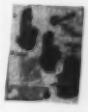


surface and internal broaching possible with American 3-way machine

To broach the lugs and cross holes of a universal joint, American engineers designed a combination tooling set-up on a standard American T-10-36 3-way machine.

Arranged with 3 stations, the machine surface broaches 3/16 stock off the inside and outside surfaces of the lugs at the center station; or broaches 1/32 off the I. D. of the lug cross holes at the two outer stations.

For more information on your particular broaching problem send a part-print or sample and hourly requirements. Address Dept. S.



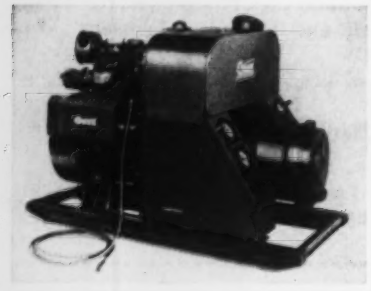
For more information on American Machines send for Catalog #300.

AMERICAN *American* BROACH & MACHINE CO.
A DIVISION OF SUNDSTRAND MACHINE TOOL CO.
ANN ARBOR, MICHIGAN

SUNDSTRAND

See *American* First — for the Best in Broaching Tools, Broaching Machines, Special Machinery

type to be manufactured to Military Standard Parts Specifications



is of aluminum construction, high-compression, overhead valve VB type engine which has proven 1000-hour endurance runs.

The 2-cylinder, 4-cycle, air cooled, gasoline-powered engine will deliver a maximum of 19 hp, with accessories, at 3600 rpm, assuring adequate power for scores of heavy-duty applications. Manual or electric starting can be provided. Conventional crankshaft extension or flywheel drive can be furnished. D. W. Onan & Sons Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 13

Power Vise Stand

. . . portable and electronic

The No. 432 Lightweight Champ portable power vise stand has a capacity of ⅛-inch to 2-inch pipe and up to 8-inch pipe when hooked

up to a geared drive shaft. In addition to driving die-stocks, pipe cutters and reamers, the No. 432 can be used to turn up or back off fittings. It can also be furnished with attachment for bar twisting.

Features include: Streamline construction, lighter weight, more powerful motor, unbreakable steel welded case, two driving arms on center line with spindle and wrenchless front chuck that insures positive no-slip grip in both right and left direction. Oster Mfg. Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 14

Finishing Line

. . . net weight is 2500 pounds

The model 52-100 full-floating, heavy-duty, adjustable polishing and buffing head and stand unit will accommodate either a 10 or 15-hp, 1750-rpm or 20-hp, 3500-rpm motor. Net weight of 2500 pounds in-

dicates the rugged construction necessary for heavy buffing jobs and to insure vibrationless operation resulting in more uniform finishes. It has a maximum float of 6 inches.

The head unit, which can be assembled for either right or left hand operation, was designed especially for use with Strait-Line automatic buffing machines. It can also be used with rotary automatics or as individual polishing and buffing stands similar to polishing and buffing lathes. Hammond Machinery Builders Inc.

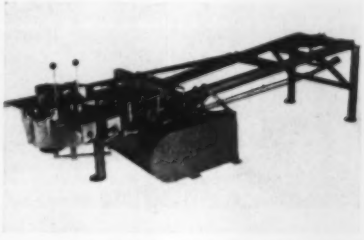
FOR MORE DATA CIRCLE REPLY CARD NO. 15

Rotary Bender

. . . self-contained

An entirely self-contained bending machine for production or custom bending applications bends both right and left hand. There are dual controls for the operator's convenience, ample clearance for bends on more than one plane. Capacity is 2½-inch OD x 0.065-inch wall steel tubing or 1½-inch standard pipe.

The No. 800 2-inch bender was designed primarily as a machine



where flexibility of operation and quick changeover of tube diameters is important. Wallace Supplies Mfg. Co.

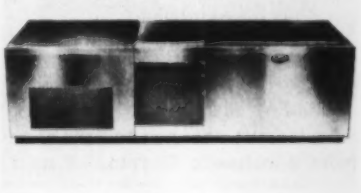
FOR MORE DATA CIRCLE REPLY CARD NO. 16

Two-Compartment Test Chamber

. . . work alone or together

A test chamber for high volume production testing is capable of faster heat removal and temperature pull-down. Two compartments of 1 cubic foot capacity each have a temperature range of −100° F to +200° F with a gradient temperature variation of less than ½ at any point within the chamber.

Motor for fan is externally mounted for servicing. Housings are designed for vapor seal, silicone grease lubrication and minimum thermal conductance. Heat cycle is applied through hermetically sealed, moisture proof, low density



electrical elements. Test chambers may be operated independently of each other. Webber Mfg. Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 17

Integral Brakemotor

. . . integrates end bracket

Shorter length, made possible by utilizing the motor end bracket as an integral part of the brake, is one feature of this new integral Brakemotor. Units utilize disc

"PRACTICALLY INDESTRUCTIBLE"

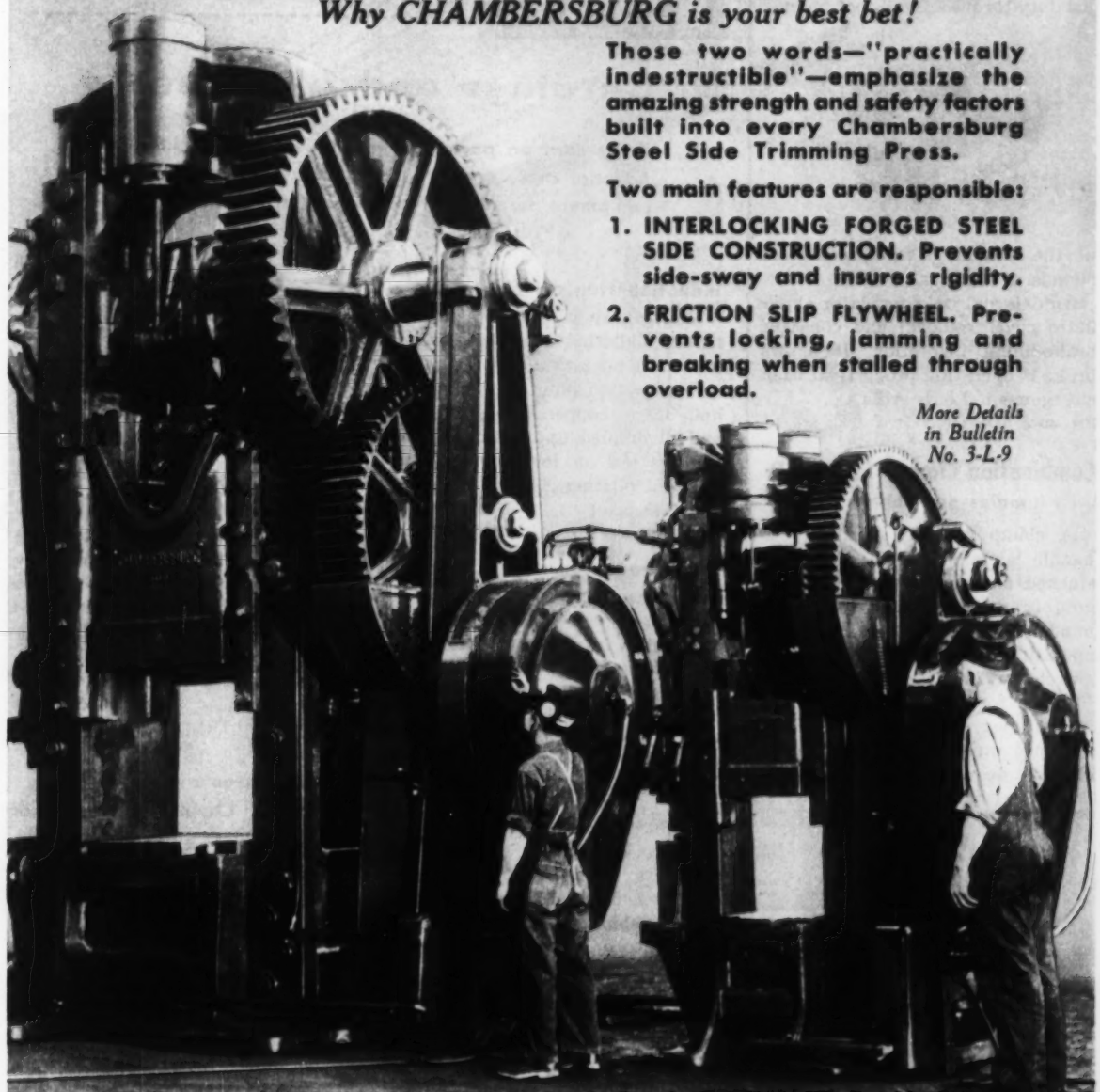
Why CHAMBERSBURG is your best bet!

Those two words—"practically indestructible"—emphasize the amazing strength and safety factors built into every Chambersburg Steel Side Trimming Press.

Two main features are responsible:

1. **INTERLOCKING FORGED STEEL SIDE CONSTRUCTION. Prevents side-sway and insures rigidity.**
2. **FRICTION SLIP FLYWHEEL. Prevents locking, jamming and breaking when stalled through overload.**

More Details in Bulletin No. 3-L-9



A wide range of sizes—No. 80 to No. 800, Single Crank; No. 80 to 500, Double Crank. Shown above are No. 500 and No. 80, Single Crank.

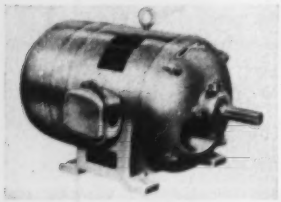
CHAMBERSBURG ENGINEERING COMPANY • CHAMBERSBURG • PENNSYLVANIA

CHAMBERSBURG

STEEL SIDE

TRIMMING PRESSES

brakes and are available in NEMA motor frame sizes from 203 to 326. Brakes furnish maximum continuous duty torque from 3 foot pounds



in the smaller sizes to 50 foot pounds in the largest sizes.

An external wear indicator eliminates cover removal and constant brake-lining inspection. It shows brake is operating properly at each engagement. Louis Allis Co.

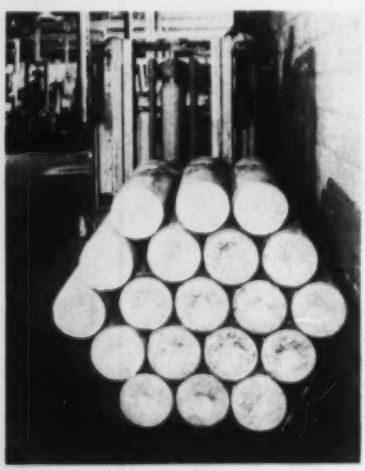
FOR MORE DATA CIRCLE REPLY CARD NO. 18

Combination Clamp

. . . handles pigs, billets

A clamp designed primarily to handle aluminum pigs singly or stacked also handles billets or ingots in steel strapped hexagonal bundles. A side shifting feature operating through use of a solenoid switch makes this possible.

Forks for handling pigs are 30 inches long. For handling steel strapped ingot bundles, triangular shaped sleeves are slipped over



the forks and secured by keeper pins. Each fork has 17 inches of lateral travel. Maximum opening between forks is 41 inches and they can be operated independently of each other. Clamping and side shifting motions are hydraulically actuated and controlled. Yale & Towne Mfg. Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 19

FREE LITERATURE

Catalogs and Clip Sheets

Reply card on page 137 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue.

Induction Heaters

Magnethermic Corp.—An illustrated bulletin on low-frequency induction heaters covers examples and uses for aluminum, magnesium, brass, copper, steel, titanium and diversified applications. Basic information on low-frequency induction heating is covered. 12 pages in color.

FOR A FREE COPY CIRCLE REPLY CARD NO. 20

Tool Production

Northwestern Tool & Engineering Co.—Catalog No. 22 will be available in September, 1954. The new condensed catalog will include 341 items with all dimensions, prices and pertinent information on a double 8½ x 11-inch sheet.

FOR A FREE COPY CIRCLE REPLY CARD NO. 21

Stress Data

Babcock & Wilcox Co.—Tubular Products Division offers a data card presenting stress rupture data on 11 tubing steels used in high temperature service. It offers a means of evaluating characteristics of metal for operation under stress and high temperature over long periods of time.

FOR A FREE COPY CIRCLE REPLY CARD NO. 22

Shaper Line

Michigan Tool Co.—Bulletin No. 1800-54 summarizes the Michigan Tool Shear-Speed shaper line. Specifications for each model are presented in table form. Informaton regarding tooling, accessories, machine operation, controls, feeds and several typical applications are included in the 12-page bulletin.

FOR A FREE COPY CIRCLE REPLY CARD NO. 23

Micromatic History

Micromatic Hone Corp.—An attractive 28-page booklet tells the story of the company's growth from 1929 to its present position. The booklet contains pictures, illustrations and diagrams which effectively tell the story of the people behind the corporation and what they have accomplished.

FOR A FREE COPY CIRCLE REPLY CARD NO. 24

Nickel Alloy Steels

International Nickel Co. Inc.—Bulletin A-68, 36 pages, contains more than 70 mechanical property charts which show properties which may be regularly expected in the nickel alloy steels in various section sizes. General characteristics of each type are briefly described to aid in the selection for particular applications.

FOR A FREE COPY CIRCLE REPLY CARD NO. 25

Chain, Sprockets

Diamond Chain Co. Inc.—"Stock Roller Chain and Sprockets" is the title of Catalog 754, 64 pages illustrated, covering Diamond's complete line of roller chain stock sprockets. Stocked by distributors in every industrial area, the line includes minimum bore sprockets for reboring as well as finished bore and Taper-lock bushed sprockets ready to use.

FOR A FREE COPY CIRCLE REPLY CARD NO. 26

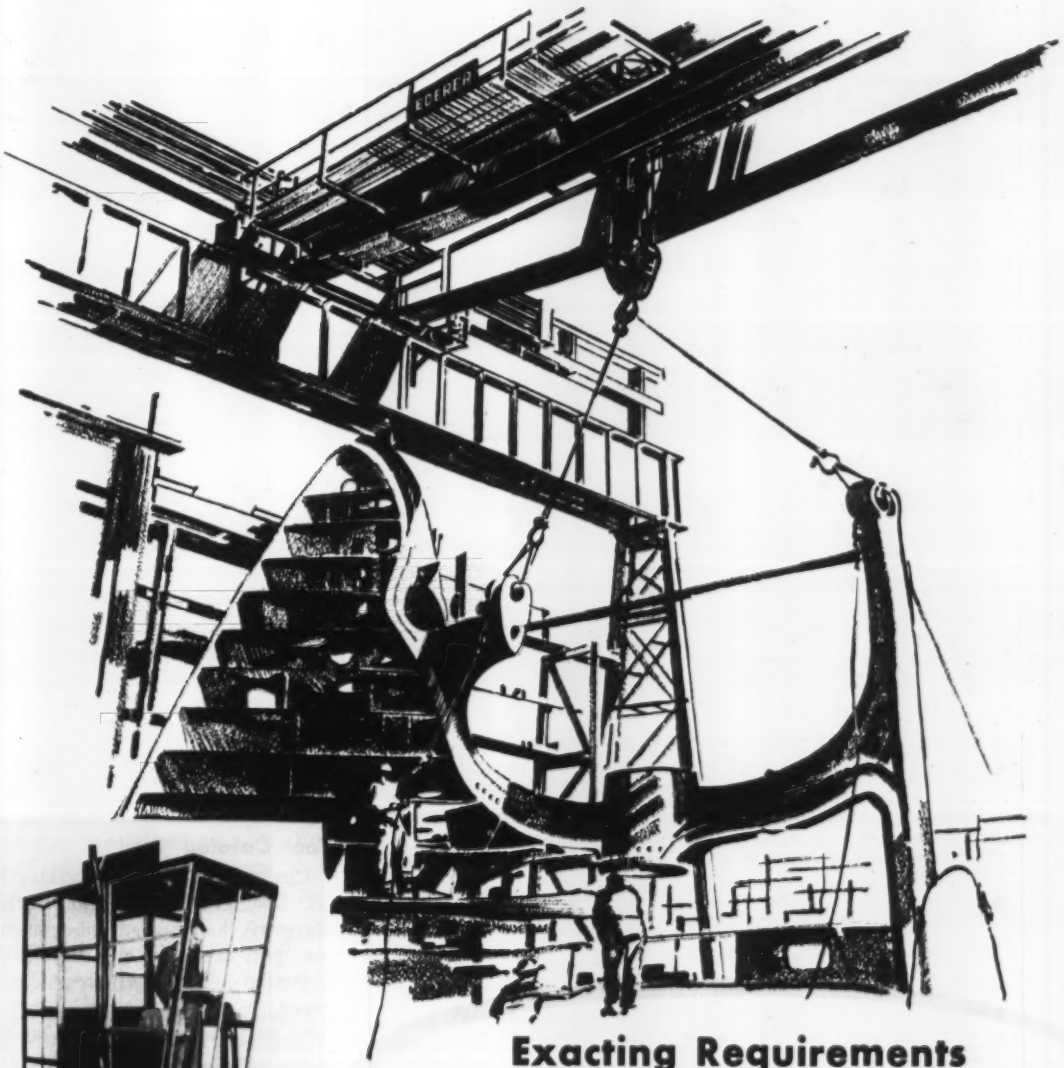
Handling Equipment

York-Gillespie Mfg. Co.—Special automatic and semi-automatic machinery, auxiliary steel mill equipment and materials handling equipment are described in a 4-page folder, which also lists in detail complete machine shop facilities and fabrication service offered by the company.

FOR A FREE COPY CIRCLE REPLY CARD NO. 27

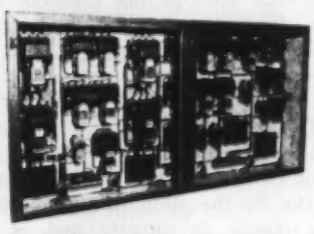
Welding Electrodes

Metal & Thermit Corp.—Complete descriptive information, along with application and procedure



Exacting Requirements for Crane Service call for every part to be right

Full vision weatherproof cab with sliding windows; equipped for full magnetic control, with cab heater, foot gong, adjustable bucket seat.



Totally enclosed, fully magnetic control panel, mounted on crane bridge; all parts front-mounted and front-connected.

When EDERER "job-engineers" a crane for you, it is designed and built to your specific materials handling requirements—for your plant—for your industry. Naturally every component part of a "job-engineered" crane must be exactly right for that crane's particular operation. One "plus" in all EDERER-built cranes is this careful attention to parts—which are also oversize throughout. This makes for the most in performance—the least in maintenance—lower cost-per-ton materials handling. You'll probably want to know more specific details . . . why not send for the new EDERER crane catalog—Bulletin CR-610?

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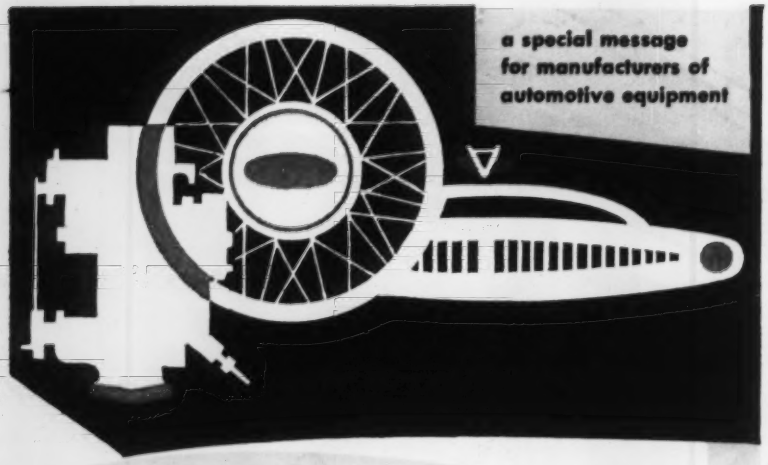
EDERER

CRANES



need a finish for low cost corrosion protection or showroom sparkle? *specify* **IRIDITE®**

Whether you're finishing non-ferrous parts for high corrosion protection, paint base, or for showroom sales appeal, you can be sure of low material and production costs and peak performance when you specify Iridite. Here's what you can do with Iridite:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

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Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ARP Plating Chemicals.
WEST COAST LICENSEE: L. H. Butcher Co.

data, on all Murex mild steel and low alloy arc welding electrodes is included in a 30-page catalog. Designed to be helpful in selecting exactly the right electrode for the job, the catalog contains formulas for estimating welding costs, heat treating procedures, hardness conversion tables, etc.

FOR A FREE COPY CIRCLE REPLY CARD NO. 28

Steel Panel

Armco Drainage & Metal Products Inc.—A 6-page brochure covers the new model interlocking steel paneled building. Features and improvements are covered and advantages of steel buildings listed.

FOR A FREE COPY CIRCLE REPLY CARD NO. 29

Operating Costs

Walter E. Heller & Co.—Described in a 16-page brochure are the Heller financial services available to industry. These services include financial analysis of company problems, after which one or more of their plans, described in the booklet, are placed at your service. Illustrated.

FOR A FREE COPY CIRCLE REPLY CARD NO. 30

Tool Catalog

Cincinnati Tool Co.—Catalog No. 65, 36-pages, illustrates all their Hargrave load-tested clamps, chisels, punches and masonry drills. Selection - type information is given.

FOR A FREE COPY CIRCLE REPLY CARD NO. 31

Electric Tractor

Mercury Mfg. Co.—Tug model 550 electric tractor, used in the trackless train system of material handling, is described in literature available from Mercury. Separate bulletins describe the features of the four-wheel model and the twin three-wheel model.

FOR A FREE COPY CIRCLE REPLY CARD NO. 32

Strip Calculator

Ulbrich Stainless Steels — A stainless steel strip calculator works on the slide rule principle. It's simple to operate and is a time and trouble saver to people who order stainless strip.

FOR A FREE COPY CIRCLE REPLY CARD NO. 33

Package System

Lexsuco Inc.—A 4-page brochure offers helpful tips on modern roof repair and resurfacing

USE A CARD

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NEW PRODUCT INFORMATION

INFORMATION ON ADVERTISED PRODUCTS

FREE EDITORIAL CLIP SHEETS

techniques. Essential roof maintenance materials and tools are furnished by this company in package units. These units, along with the advantages of their method, are pointed up in the illustrated brochure.

FOR A FREE COPY CIRCLE REPLY CARD NO. 34

Voltage Transmission

Aluminum Co. of America—Reaching a new horizon in electric power transmission, 300 kv and above, is the subject of "Alcoa Expanded ACSR for Superhigh Voltage Transmission." The booklet describes basic research and engineering investigations and laboratory and field trial tests involved in the development of the conductor.

FOR A FREE COPY CIRCLE REPLY CARD NO. 35

Electric Equipment

General Electric Co.—"Electric Equipment for Process Industries" provides detailed information on: G-E electrical equipment for power generation; power distribution and conversion; power utilization; instrumentation; service shops and warehouses, applicable to the process industries. Designated GED-1966A, the booklet is 28 pages long.

FOR A FREE COPY CIRCLE REPLY CARD NO. 36

Illustrating Weldments

United Tool & Die Co.—Acme Welding Division offers a booklet covering a catalytic cracker unit built to function as part of a large catalytic cracking plant for refining natural gas. This weldment and others are featured in the fully-illustrated bulletin.

FOR A FREE COPY CIRCLE REPLY CARD NO. 37

Oxyacetylene Use

Air Reduction Sales Co.—A 12-page booklet, "Use of Oxyacetylene in Rolling Mills," discusses increase in uses of oxyacetylene for economical steel plant operations. It details, with charts and photographs, the advance of oxygen cutting from routine hand maintenance to engineered scarfing and oxygen hot cut-off machines.

FOR A FREE COPY CIRCLE REPLY CARD NO. 38

Knives, Cutters

Wapakoneta Machine Co. — A catalog illustrates their complete line of machine knives, shear blades and cutters. All types of machine knives and shear blades, straight, circular and irregular, are described and illustrated.

FOR A FREE COPY CIRCLE REPLY CARD NO. 39

Writeprinter

C. F. Pease Co.—Low-cost, fully automatic, high production white-printing machine named the Pease Challenger is covered in a 6-page brochure. Illustrations show how it works. Specifications are listed on the back page.

FOR A FREE COPY CIRCLE REPLY CARD NO. 40

Castings

Campbell, Wyant & Cannon Foundry Co.—Up-to-date information on all types of gray iron and steel castings is contained in a 24-page book, "One Source for Your Casting Needs." The book illustrates the great range of various types of castings manufactured by CWC.

FOR A FREE COPY CIRCLE REPLY CARD NO. 41

Shop Equipment

Auto Sheet Metal Works—A full line of Trojan steel shop equipment is described in an 8-page, two-color brochure, No. C-22-33. The brochure features the Trojan series 51 benches, available in standard dimensions in 21

For free literature, editorial clips or more information on products described in this section, circle the corresponding number at left. Fill in box below for articles or advertisements not numbered.

ARTICLE OR ADVERTISEMENT — PAGE

NAME — TITLE

COMPANY

PRODUCTS MANUFACTURED

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different combinations and the series 53 extra-strong, extra-long benches.

FOR A FREE COPY CIRCLE REPLY CARD NO. 42

12-Pointer Nut

National Machine Products Co. —A 12-page brochure describes the 12-pointer nut. Complete engineering data and prices are included. Complete sales information on the nut, designed to permit smaller tool clearances, is given. Diagrams included.

FOR A FREE COPY CIRCLE REPLY CARD NO. 43

Finishing Review

U. S. Galvanizing & Plating Equipment Corp. — A 16-page booklet shows how this company has helped solve the many production problems submitted to them, many requiring original approaches in engineering and design. Their line of automatic and mechanical finishing equipment is described and illustrated.

FOR A FREE COPY CIRCLE REPLY CARD NO. 44

Controller

Barber-Colman Co.—Bulletin F 6314 and Educational Bulletin No. 9 describe various control forms available in the 400 series Capacitrol electronic controllers. Detailed text is supplemented with photographs, diagrams. Dimensions listed.

FOR A FREE COPY CIRCLE REPLY CARD NO. 45

Line Valves

Numatics Operating Valve—The new line of Numatics in-line valves is shown in Bulletin No. 4020. Parts' lists and mounting dimensions are given for each type described.

FOR A FREE COPY CIRCLE REPLY CARD NO. 46

Pressure Blowers

Chicago Blower Corp.—A bulletin detailing their Turbo-Pressure blowers contains all necessary charts and specs regarding this type of fan. Design and application are fully covered in the booklet, CTB-103.

FOR A FREE COPY CIRCLE REPLY CARD NO. 47

Power Transmission

Link-Belt Co.—A new 340-page catalog provides selection guide to Link-Belt's standard products line. The several major product classifications of catalog No. 950 include chains and sprockets for conveying, elevating and power transmission. The publication, bound with flexible cover, has die-cut thumb index, should prove a valuable reference to engineers and layout men.

FOR A FREE COPY CIRCLE REPLY CARD NO. 48

EDITORIAL REPRINTS:

Traffic Management

Of all the phases of distribution, transportation is in the greatest ferment. Proof is the development of piggybacking, the approval after more than 30 years' debate, of the St. Lawrence Seaway and proposals for 200-mile overland conveyors and moving roads. But you don't need to wait for the Seaway to make improvements. The seventh report in STEEL's Program for Management, on page 89, gives suggestions on how you can improve your traffic management.

FOR A FREE COPY CIRCLE REPLY CARD NO. 49

Dividends in Merit Rating

Pay inequities in your plant can undermine good labor relations. Job and employee rating may be the method you're seeking to weed out such inequities. Merit rating can also help you in making promotion and layoffs. To learn more about merit rating and its opportunities, see page 60.

FOR A FREE COPY CIRCLE REPLY CARD NO. 50

Aluminum Bodies

Competitive points for aluminum in truck body production include corrosion resistance, weight saving. Most significant however, says the article on page 100, is ease of fabrication through extruded stocked shapes. Production sequences on aluminum truck bodies are described.

FOR A FREE COPY CIRCLE REPLY CARD NO. 51

Stress Concentration

Effects of stress concentrations, such as those resulting from notches, may be impossible to predict from conventional tests. The problem was quickly recognized, and on page 122 you'll find some of the steps taken to correct the situation.

FOR A FREE COPY CIRCLE REPLY CARD NO. 52

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4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
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8-23-54

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Market Outlook

DON'T let the lackadaisical rate of steel production lead you to believe that "things are bad all over."

There are some notable exceptions among steel consumers. One, for instance, is oil and gas well drillers. All this year they have stood out as a consistently good buyer of steel. It looks like they will continue that way through the rest of 1954.

RECORD-BREAKING— The number of wells drilled is at a record-breaking high this year. Drilled in the first half of the year were 25,900. Prospects for the second half are 25,600. Total for this year would be 51,500, compared with the record year's total of 49,053 in 1953. Not only is the number of wells drilled at a record-breaking high but the average depth per well is increasing as the readily available oil supplies are exhausted. The deeper the well the more steel required for drill pipe and casing.

CONFIDENT— A Pittsburgh area producer of oil country goods is confident that the rest of this year will see capacity operations at its mill.

Reflecting the high rate of activity among oil and gas well drillers are mill shipments of oil country goods in the first half of this year. Of all finished steel shipped by mills in that period, 3.7 per cent were oil country goods, compared with 2.4 per cent in the first half of last year.

BRIGHT SPOTS— Oil and gas well drilling is not the only steel consumer that is fully employed. Another, and large one, is construction (see STEEL, Aug. 16, 1954, p. 139).

Giving promise of bolstering the demand for steel is the automobile industry. If it starts its production of new models at as fast a pace as it hopes to it will be coming into the market for steel for delivery beginning in October.

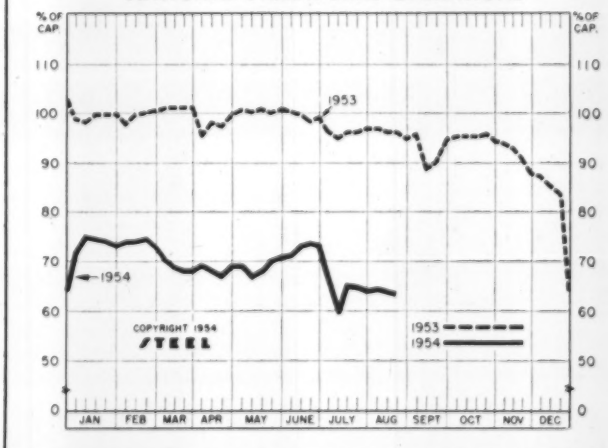
UPTURN— A slightly increased manufacturing level for farm equipment is noted in the Midwest. This should strengthen demand particularly for hot-rolled and cold-finished steel bars. Low requirements of farm equipment producers during the last two months helped put many bar mills on reduced work schedules.

The government program of shipbuilding also promises to add some strength to steel demand. A moderate increase in shipyard buying of hull plates is expected after October.

SLOW MOTION— Right now total demand for steel is sufficient to keep only two-thirds of the country's steel producing capacity busy. In fact, steel ingot output shrank fractionally in each of the last two weeks. In the week ended Aug. 22 national output was at 63 per cent of capacity, a decline of 1 point from the preceding week.

PRICE BOOSTERS— In contrast to the lethargic rate of steel production, steel scrap, one of the principal raw materials for steelmaking, rose pricewise under the stimulus of export demand. Reflecting this, STEEL's price composite on steelmaking grades of scrap rose last week to $29 a ton, a 50-cent increase over the preceding week. Some estimates are that close to 500,000 tons of scrap have been ordered for export, a substantial part of which is yet to be shipped. Orders are largely for shipment to Europe, although some are for South America.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Aug. 22	Change	Same Week 1953	Same Week 1952
Pittsburgh	61	— 1	95.5	95.5
Chicago	68.5	— 0.5*	100.5	99.5
Mid-Atlantic	59	+ 2	96	91
Youngstown	64	— 1	106	106
Wheeling	78	0	92	93.5
Cleveland	55.5	— 5.5*	102	105.5
Buffalo	56	0	106.5	104
Birmingham	62	— 25	94	100
New England	52	— 3	90	92
Cincinnati	51.5	— 3	91.5	60
St. Louis	51.5	— 3	103	104
Detroit	57	+ 7*	109	106
Western	82	— 1	102.5	103.5
National Rate	63	— 1	96	97

INGOT PRODUCTION‡

	Week Ended Aug. 22	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	92.2†	94.9	96.9	134.6
NET TONS (In thousands)	1,481†	1,525	1,557	2,162

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,384,549 in 1954; 2,254,459 in 1953; 2,077,040 in 1952.

Metalworking Outlook—p. 41 Technical Outlook—p. 99

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Aug. 17

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.525	Bars, H.R., alloy	8.783	Strip, C.R., stainless, 430 (lb)	$0.415
Rails, light, 40 lb	5.917	Bars, H.R., stainless, 303 (lb)	0.418	Strip, H.R., carbon	5.088
Tie Plates	5.275	Bars, H.R., carbon	5.021	Pipe, black, buttweld (100 ft)	15.000
Axles, railway	7.500	Bars, reinforcing	5.058	Pipe, galv., buttweld (100 ft)	18.310
Wheels, freight car, 33 in. (per wheel)	48.500	Bars, C.F., carbon	8.174	Pipe line (100 ft)	146.804
Plates, carbon	4.675	Bars, C.F., alloy	11.285	Casing, oil well, carbon (100 ft)	154.216
Structural Shapes	4.517	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	227.875
Bars, tool steel, carbon (lb)	0.430	Sheets, H.R., carbon	4.880	Tubes, boiler (100 ft)	‡
Bars, tool steel, alloy, oil hardening die (lb)	0.525	Sheets, C.R., carbon	5.871	Tubing, mechanical, carbon	‡
Bars, tool steel, H.R., alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.115	Sheets, galvanized	7.140	Tubing, mechanical, stainless, 304 (100 ft)	161.193
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.610	Sheets, C.R., stainless, 302 (lb)	0.548	Tin plate, hot-dipped, 1.25 lb	$8.433
		Sheets, electrical	9.350	Tin plate, electrolytic, 0.25 lb	7.133
		Strip, C.R., carbon	7.507	Black plate, can making quality	6.233
				Wire, drawn, carbon	7.938
				Wire, drawn, stainless, 430 (lb)	0.545
				Bale ties (bundle)	5.860
				Nails, wire, 8d common	7.815
				Wire, barbed (80-rod spool)	7.109
				Woven wire fence (20-rod roll)	16.815

‡ Not available.

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Aug. 17 1954	Aug. 10 1954	Month Ago	July Average
(1947-1949=100)	144.5	144.5	144.6	144.6

STEEL's FINISHED STEEL PRICE INDEX*

	Aug. 18 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	194.19	194.19	194.19	189.38	152.90
Index in cents per lb.	5.261	5.261	5.261	5.130	4.142

STEEL's ARITHMETICAL PRICE COMPOSITES

	Aug. 18 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT*	$117.77	$117.77	$117.64	$115.56	$91.55
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.10
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.60
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	29.00	28.50	27.33	43.17	21.92

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.
†Revised

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Aug. 18 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.35
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.35
Bars, H.R., del. Philadelphia	4.55	4.55	4.55	5.302	3.816
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	3.95
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.25
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.25
Shapes, del., Philadelphia	4.53	4.53	4.53	4.38	3.492
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.40
Plates, Chicago	4.225	4.225	4.225	4.10	3.40
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.35	3.50
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.40
Plates, Claymont, Del.	4.225	4.225	4.225	4.55	3.50
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.25
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.20
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4.40
Strip, H.R., Pitts.	4.05	4.05	4.05	4.025	3.25
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45-5.95	4.275
Strip, C.R., Chicago	6.00	6.00	6.00	5.70	4.00
Strip, C.R., Detroit	5.60-5.90	5.60-5.90	5.60-5.90	5.45-6.05	4.20
Wire, Basic, Pitts.	5.75	5.75	5.75	5.475-5.525	4.15
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.35-6.55	5.15
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$7.75
SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$78.00	$78.00	$78.00	$75.50	$61.00
Wire rods, $\frac{7}{32}$-$\frac{9}{32}$" Pitts.	4.675	4.675	4.675	4.525	3.40

PIG IRON, Gross Ton	Aug. 18 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	49.66	49.66	59.66	60.75	49.39
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, del. Phila.	50.16	50.16	60.16	61.25	49.89
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	39.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	60.43	45.43
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	200.00†	175.00*

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$29.50	$29.50	$28.50	$45.50	$23.00
No. 1 Heavy Melt, E. Pa.	27.50	26.00	24.00	42.50	20.25
No. 1 Heavy Melt, Chicago	30.00	30.00	29.00	41.50	21.50
No. 1 Heavy Melt, Valley	30.50	29.50	29.50	45.50	23.75
No. 1 Heavy Melt, Cleve.	28.50	28.00	24.50	44.50	20.00
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	43.75	24.25
Rails, Rerolling, Chicago	44.50	44.50	42.50	56.00	34.50
No. 1 Cast, Chicago	35.50	35.50	36.00	42.00	39.00

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$13.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	16.75	15.75
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.00

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 22.20, pigs 20.50 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 24; No. 43, 5% Si, 23.8; No. 142, 4% Cu, 25.1; No. 195, 4.5% Cu, 0.8% Si, 24.5; No. 214, 3.8% Mg, 25.2; No. 356, 7% Si, 0.3% Mg, 23.9.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 27.50-28.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.; Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb del.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg; $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 30.00 del. Conn. Valley, 30.00 del. Midwest; Lake 30.00 del; Fire refined 29.75 del.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $145-$150 per troy oz.

Lead: Common 13.80, chemical 13.90, corroding 13.90, St. Louis; N.Y. basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8%, self-palletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks, 1.3 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $285-$290, nom., per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.08 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots for addition to cast iron, 60.00; prices

DAILY NONFERROUS PRICE RECORD

	Price Aug. 18	Last Change		Previous Price	July Avg.	June Avg.	Aug. 1953 Avg.
Copper	30.00	Apr.	12	29.75-30.00	30.000	30.000	29.375
Lead	13.80	June	15	14.05	13.800	13.906	13.800
Zinc	11.00	June	3	10.50	11.000	10.923	11.000
Tin	92.50	Aug.	18	92.625	96.562	94.178	80.530
Nickel	60.00	Jan.	14, 1953	56.50	60.000	60.000	60.000
Aluminum	22.20	Aug.	5, 1954	21.50	21.500	21.500	21.500
Magnesium	27.00	Mar.	9, 1953	24.50	27.000	27.000	27.000

Quotations in cents per pound based on: Copper, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99 + %, del.; Magnesium 99.8%, Freeport, Tex.

f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium. $140-$150 per troy oz nom.

Palladium: $21 per troy oz.

Platinum: $84-$87 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $5-$6 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $39.00 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 93.75.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.) $4.72; grade A-2 (0.5% Fe max) $4.46 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $4.95 per lb, f.o.b. shipping point; less than 1000 lb $5.10; 99+% hydrogen reduced, $4.65. Treated ingots $6.70.

Zinc: Prime Western 11.00, brass special 11.25, intermediate 11.50, E. St. Louis, freight allowed over 0.50 per pound. High grade 12.35, special high grade 12.50, die casting alloy ingot 15.00, del.

Zirconium: Sponge $10 per lb; powder electronics grade $15, flash grade $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingots: Piston Alloy 20.50-21.00; No. 12 foundry alloy (No. 2 grade) 19.50-20.00; 5% silicon alloy, 0.60 Cu max., 23.00-23.25; 13 alloy, 0.60 Cu max., 23.00-23.25; 195 alloy 21.25-22.25; 108 alloy 20.25-20.75; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.00-21.50; grade 2, 20.00-20.50; grade 3, 19.00-19.50; grade 4, 18.00-18.50.

Brass Ingot: Red brass, No. 115, 27.00-28.50; tin bronze No. 225, 39.00-40.00; No. 245, 33.25-33.75; high-leaded tin bronze, No. 305, 31.50-33.00 No. 1 yellow, No. 405, 23.25-24.25; manganese bronze No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 27.00; AZ91C, 31.50; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.68; rod, bar, wire, $1.65.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l. 37.03. Magnet wire del., 15,000 lb or more 41.83; l.c.l. 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $19.00 per cwt; pipe, full coils $19.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $11; forging billets $6; hot-rolled and forged bars, $6.

ZINC

(Prices per lb c.l., f.o.b. mill) Sheets 23.00, ribbon zinc in coils, 18.50-20.50; plates 18.00-22.25.

ZIRCONIUM

Plate $27; H.R. strip $28; C. R. strip $35; forged or H.R. bars $27; wire, 0.015 in., 1 cent per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	86.5	67.5	92.5
Strip, C.R.	92.5	70.5	98.5
Plate, H.R.	84.5	66.5	90.5
Rod, Shapes	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks	..	60.0	...

ALUMINUM

(30,000 lb base; freight allowed over 499 lb) Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	12-49	34.9	...	...
0.135-0.096	12-48	35.4	...	...
0.095-0.077	12-48	36.1	33.6	38.6
0.076-0.061	12-48	36.7	33.8	38.8
0.060-0.048	12-48	37.2	34.1	39.2
0.047-0.038	12-48	37.7	34.6	39.6
0.037-0.030	12-48	38.1	35.0	40.3
0.029-0.024	12-48	38.7	35.3	40.8
0.023-0.019	12-36	39.4	36.1	41.6
0.018-0.017	12-36	40.2	36.7	42.5
0.016-0.015	12-36	41.1	37.5	43.7
0.014	12-24	42.1	38.5	45.0
0.013-0.012	12-24	43.3	39.2	46.0
0.011	12-24	44.3	40.4	47.6
0.010-0.0095	12-24	45.5	41.5	49.2
0.009-0.0085	12-24	46.8	43.0	51.3
0.008-0.0075	12-24	48.4	44.2	53.1
0.007	12-18	49.9	45.7	55.4
0.006	12-18	51.5	47.1	60.4

*72-180 in. lengths. †26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. width or dia., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	34.7	38.9
50S-F	34.7	38.9
4S-F	35.7	40.6
52S-F	37.4	42.4
61S-T6	38.6	43.0
24S-T4*	40.8	46.9
75S-T6*	48.6	55.2

*24-48 in. widths or dia., 72-180 in. lengths.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	—Round— 11S-T3	17S-T4	—Hexagonal— 11S-T3	17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	48.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 43.8-34.4, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 50.2-38.4 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 63S-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
⅜	$15.05	2	$ 46.30
1	23.65	4	127.70
1¼	32.00	6	228.50
1½	38.25	8	343.80

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 94.00, 0.064-in. 73.00, 0.125-in. 60.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot rolled AZ31, 53.00, 20,000 lb or more 0.250-in. and over, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 59.00, 20,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in., 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ⅛-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.98c	....	48.44	26.000	26.000	25.250
Yellow Brass	41.72	34.50d	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.82	48.92	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	53.36	59.43g	57.89	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clippings 13.00; low copper clippings 13.00; mixed clippings 11.00; old sheet 10.00; borings and turnings 6.00; pistons and struts 7.50; crankcases 10.00; industrial castings 10.00.

Copper and Brass: Heavy copper and wire, No. 1 24.50-25.00; No. 2 copper 23.00-23.25; light copper 21.00-21.25; No. 1 composition red brass 19.00-19.50; No. 1 composition turnings 18.50-19.00; mixed brass turnings 11.50-12.00; new brass clippings 18.00; No. 1 brass rod turnings 15.00; light brass 11.50-12.00; heavy yellow brass 14.00; new brass rod ends 16.00; auto radiators, unsweated 15.00; cocks and faucets 16.00-16.50; brass pipe 16.50-17.00.

Lead: Heavy 11.00-11.25; battery plate 5.75-6.00; linotype and stereotype 13.00; electrotype 11.50; mixed babbitt 12.00-12.50.

Magnesium: Clippings 18.50-19.50; clean castings 17.50-18.50; iron castings, not over 10% removable Fe, 16.50-17.50.

Monel: Clippings 23.00-25.00; old sheet 21.00-23.00; turnings 16.00-18.00; rods 23.00-25.00.

Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

Tin: No. 1 pewter 55.00-60.00; block tin pipe 75.00-80.00; No. 1 babbitt 50.00.

Zinc: Old zinc, 4.75-5.00; new die cast scrap, 4.50-4.75; old die cast scrap, 3.00-3.25.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 15.50-15.75; 51S, 52S clippings 15.25-15.75; 14S, 17S, 24S clippings 14.50-14.75; mixed clippings 14.00-14.50; old sheet 13.00-13.50; old cast 13.00-13.50; clean old cable, free of steel 15.00-15.75; borings and turnings 13.25-13.75.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper Brass: No. 1 copper 27.00; No. 2 copper 25.50; light copper 24.00; refinery brass (60% copper) per dry copper content 23.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 26.75-27.00; No. 2 copper 25.00-25.25; light copper 23.50-23.75; No. 1 composition solids 21.00-21.50; heavy yellow brass solids 17.00; yellow brass turnings 16.00; radiators 17.75-18.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.115; 200-499 lb $1.10; 500-999 lb $1.095; 1000 lb or more $1.09.

Zinc: Bar 18.50, bar or flat top 17.50 ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 71; 100-600 lb 56.7; 700-1900 lb 54.3; 2000-9900 lb 52.5; 10,000 lb or more 51.4.

Stannous Chloride: (Anhydrous): Less than 50 lb $1.57; 50 lb $1.23; 100-300 lb $1.08; 400-900 lb $1.055; 100-1900 lb $1.031; 2000-4900 lb 99.4; 5000-19,000 lb 99.3; 20,000 lb and over 87.2.

Stannous Sulphate: Less than 5 lb $1.269; 50 lb 96.9; 100-1900 lb 94.9; 2000 lb and over 92.9.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals

Demand for metals sends producers to Pacific Northwest, but it's not mineral wealth that's the chief attraction. It's the potentiality of cheap electric power

INDUSTRIAL INTRIGUE is unfolding in the Pacific Northwest as metal companies bid to tap the wilderness wealth of Canada and Alaska.

The stakes run over a billion dollars with long-term effects on the area many times that amount. Curiously, mineral wealth is not the chief attraction. It's the potentiality of cheap electric power from the area's vast network of untapped rivers. This power would be used for refining of metals. While secrecy shrouds many details, the major patterns are emerging.

In the Lead—Sitting in the driver's seat now is Canada's Ventures Ltd., a holding company comprised chiefly of Frobisher Ltd., Northwest Power Industries Ltd. and Quebec Metallurgical Institute Ltd. Frobisher recently got a go-ahead from the British Columbia government on a $700-million to $1-billion plan: To dam the Yukon and build a network of power plants capable of producing 4.3 million horsepower of electricity and smelting plants for aluminum, nickel, cobalt, manganese, iron and steel, possibly lead and zinc.

Location would be in northern British Columbia, up the Taku river across the border from Juneau, Alaska. First stage of the project would cost nearly $300 million and would be operating in 1962. Conditions attached to governmental approval include no tax concessions and a strict performance bond. Financing is also a big hurdle.

Also Ran?—In the back seat at the moment is Aluminum Co. of America, which in 1952 proposed to tap the Yukon, transmitting power across the border to Alaska for a two-stage $400-million to $700-million aluminum smelter project capable of ultimate capacity of 400,000 tons. While Alcoa can get the money and still wants to put its ideas to test, Canadian officials believe the whole works should be in Canada. Counterargument is that aluminum would be subject to a 1.5-cent-per-pound duty coming in from Canada but would not be from Alaska, while exported power is not subject to duty.

For Alcoa, buying the power is not enough, either; aluminum companies like to keep power production under their wing and not subject to changing rates or conditions of use. Alcoa has undoubtedly been put into the same room with Frobisher to work out a partnership deal, but agreement has not been reached.

Triangle—This opened the way for Reynolds Metals Co., a surprise entry, to dicker with Frobisher. Canadian government officials let out the news that Reynolds had agreed to take a 30-per-cent financial interest in the Frobisher scheme and to build an aluminum smelter in Canada to use the power. Reynolds admits only that negotiations are in progress.

Aside from these three principals, there are two others to be heard from. Kaiser Aluminum & Chemical Corp. said in April its engineers were looking for British Columbia power sites. In May, Kaiser was surveying Arrow lake in southeast British Columbia, and in July company officials were discussing possibilities of a B. C. power project. A year ago (STEEL, Aug. 24, 1953, p. 118), Harvey Aluminum Co. applied to the Federal Power Commission for a temporary permit to investigate possibility of a hydro project on the Copper river in Alaska capable of 1,475,000 horsepower. Harvey's subsequent actions, if any, have been kept under wraps.

Took Strike in Stride

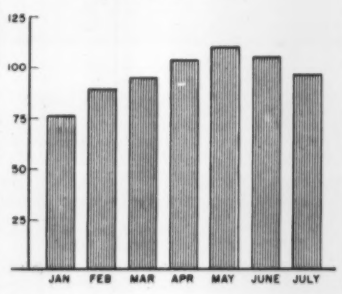
Copper buyers didn't panic last week when a strike hit Kennecott Copper Corp.'s western divisions, but they maintained close and cordial contact with their sources of supply. Kennecott's initial offer of a 7-cent package didn't appear sweet enough to the union, resulting in a 10,000-man work stoppage. Kennecott accounts for about 45 per cent of domestic copper output.

First-half import-export statistics are significant in showing the amount of Chilean copper now coming into the country. In May, 14,051 tons of refined were imported from Chile, in June 39,262 tons. Total imports amounted to 46,484 tons in June. Net imports jumped by 32,966 tons in June to 61,197 tons. Scrap exports for the first half (48,028 tons) already top all of 1953 (34,568 tons).

Summer Slowdown

COPPER DELIVERIES to U. S. Fabricators

(Thousands of net tons)



Source: Copper Institute

Market Memos

• Another primary aluminum production record was racked up in July, chiefly because it had one more working day than June. The 126,162 tons turned out compares with June's 120,758 tons.

• Texas City tin smelter has resumed operations after a July shutdown. Ore will come from Bolivia, Indonesia, Thailand and other sources.

• Centrifugal casting process using rubber dies "has materially reduced the cost of tin-base die casting," reports the Tin Research Institute. Additions are chiefly copper and antimony. Process is useful where intricate design with sharpness of detail are important but dimensional accuracy need not be achieved.

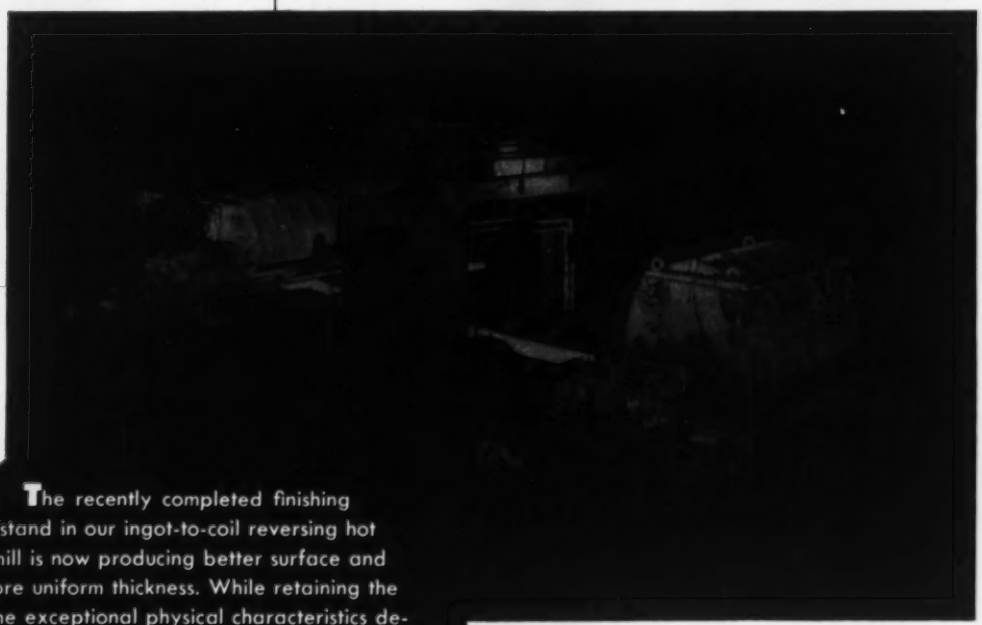
• Copper and copper-alloy mill products set-asides in the fourth quarter were cut sharply by Business & Defense Services Administration. Highest reserve required is the 17 per cent for alloyed seamless tube and pipe.

• Mueller Brass Co. is now in the aluminum sheet and strip business, buying entire capital stock of Sheet Aluminum Corp., Jackson, Mich.

• Climax Molybdenum Co. will pump a quarter-million dollars into additional research and molybdenum chemicals and moly-base for high temperature use.

• Hue and cry for tariff relief on lead and zinc is rising as day-to-day markets continue dull and the government stockpile remains the most consistent buyer.

New REVERSING HOT MILL AT *Newport Steel*



The recently completed finishing stand in our ingot-to-coil reversing hot mill is now producing better surface and more uniform thickness. While retaining the same exceptional physical characteristics developed by this type of rolling, an extra measure of quality is added to hot-rolled and hot-rolled pickled coils and sheets. Next spring brings another important advance as an entirely new cold mill operation gives the booming Midwest and South a nearby source for cold-rolled sheets. Let us explain how you can profit by these notable advantages at Newport Steel.

PRODUCTS OF NEWPORT STEEL

Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Electric Weld Line Pipe
Hot-Rolled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Hot-Rolled Pickled Sheets
Electrical Sheets
Alloy Sheets and Plates
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts

ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

Newport Steel
CORPORATION
NEWPORT, KENTUCKY

STEEL PRICES

Mill prices as reported to STEEL, *cents per pound* except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on page 145. Key to footnotes, page 147.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ..... $61.50

INGOTS, Alloy (NT)
Detroit R7 ..... $66.00
Midland,Pa. C18 ..... 65.00
Munhall,Pa. U5 ..... 65.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Aliquippa,Pa. J5 ..... $64.00
Bessemer,Pa. U5 ..... 64.00
Buffalo R2 ..... 64.00
Clairton,Pa. U5 ..... 64.00
Ensley,Ala. T2 ..... 64.00
Fairfield,Ala. T2 ..... 64.00
Fontana,Calif. K1 ..... 72.00
Gary,Ind. U5 ..... 64.00
Johnstown,Pa. B2 ..... 64.00
Lackawanna,N.Y. B2 ..... 64.00
Munhall,Pa. U5 ..... 64.00
So.Chicago,Ill. R2,U5 ..... 64.00
So.Duquesne,Pa. U5 ..... 64.00
Youngstown R2 ..... 64.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ..... $78.00
Bessemer,Pa. U5 ..... 78.00
Buffalo R2 ..... 78.00
Clairton,Pa. U5 ..... 78.00
Cleveland R2 ..... 78.00
Conshohocken,Pa. A3 ..... 83.00
Ensley, Ala. T2 ..... 78.00
Fairfield,Ala. T2 ..... 78.00
Fontana,Calif. K1 ..... 86.00
Gary, Ind. U5 ..... 78.00
Geneva,Utah C11 ..... 78.00
Houston S5 ..... 85.50
Johnstown,Pa. B2 ..... 78.00
Lackawanna,N.Y. B2 ..... 78.00
LosAngeles B3 ..... 87.50
Munhall,Pa. U5 ..... 78.00
Seattle B3 ..... 91.50
So.Chicago R2,U5,W14 ..... 78.00
So.Duquesne,Pa. U5 ..... 78.00
So.SanFrancisco B3 ..... 87.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ..... $86.00
Buffalo R2 ..... 86.00
Canton,O. R2, T7 ..... 86.00
Conshohocken,Pa. A3 ..... 93.00
Detroit R7 ..... 88.00
Fontana,Calif. K1 ..... 105.00
Gary,Ind. U5 ..... 86.00
Houston S5 ..... 93.00
Ind.Harbor,Ind. Y1 ..... 86.00
Johnstown,Pa. B2 ..... 86.00
Lackawanna,N.Y. B2 ..... 86.00
LosAngeles B3 ..... 106.00
Massillon,O. R2 ..... 86.00
Midland,Pa. C18 ..... 86.00
Munhall,Pa. U5 ..... 86.00
So.Chicago R2,U5,W14 ..... 86.00
So.Duquesne,Pa. U5 ..... 86.00
Struthers,O. Y1 ..... 86.00
Warren,O. C17 ..... 86.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ..... $96.50
Canton,O R2 ..... 96.50
Cleveland R2 ..... 96.50
Gary,Ind. U5 ..... 96.50
So.Chicago R2, W14 ..... 96.50
So.Duquesne,Pa. U5 ..... 96.50

SKELP
Aliquippa,Pa. J5 ..... 4.00
Fontana,Calif. K1 ..... 4.775
Munhall,Pa. U5 ..... 3.90
Warren,O. R2 ..... 3.90
Youngstown R2, U5 ..... 3.90

WIRE RODS
Aliquippa,Pa. J5 ..... 4.675
Alton,Ill. L1 ..... 4.85
Buffalo B11, W12 ..... 4.675
Cleveland A7 ..... 4.675
Donora,Pa. A7 ..... 4.675
Fairfield,Ala. T2 ..... 4.675
Fontana,Calif. K1 ..... 5.475
Gadsden,Ala. R2 ..... 4.675
Houston S5 ..... 5.075
IndianaHarbor,Ind. Y1 4.675
Johnstown,Pa. B2 ..... 4.675
Joliet,Ill. A7 ..... 4.675
KansasCity,Mo. S5 ..... 5.015
Kokomo,Ind. C16 ..... 4.775
LosAngeles B3 ..... 5.475
Minnequa,Colo. C10 ..... 4.925
Monessen,Pa. P7 ..... 4.675
No.Tonawanda,N.Y. B11 4.675
Pittsburg,Calif. C11 ..... 5.325
Portsmouth P12 ..... 4.675
Roebling,N.J. R5 ..... 4.775
So.Chicago,Ill. R2 ..... 4.675
Sterling,Ill.(1) N15 ..... 4.675
Sterling,Ill. N15 ..... 4.775
Struthers,O. Y1 ..... 4.675
SparrowsPoint,Md. B2 4.775
Torrance,Calif. C11 ..... 5.475
Worcester,Mass. A7 ..... 4.975

STRUCTURALS

Carbon Steel Stand. Shapes
Aliquippa,Pa. J5 ..... 4.25
Bessemer,Ala. T2 ..... 4.25
Bethlehem,Pa. B2 ..... 4.30
Birmingham C15 ..... 4.25
Clairton,Pa. U5 ..... 4.25
Fairfield,Ala. T2 ..... 4.25
Fontana,Calif. K1 ..... 4.90
Gadsden,Ala.(31) R2 ..... 4.28
Gary,Ind. U5 ..... 4.25
Geneva,Utah C11 ..... 4.25
Houston S5 ..... 4.65
Ind.Harbor,Ind. 1-2 ..... 4.25
Johnstown,Pa. B2 ..... 4.30
KansasCity,Mo. S5 ..... 4.85
Lackawanna,N.Y. B2 ..... 4.30
LosAngeles B3 ..... 4.95
Minnequa,Colo. C10 ..... 4.70
Munhall,Pa. U5 ..... 4.25
Niles,Calif. P1 ..... 4.80
Phoenixville,Pa. P4 ..... 3.95
Seattle B3 ..... 5.00
So.Chicago U5, W14 ..... 4.25
So.SanFrancisco B3 ..... 4.90
Torrance,Calif. C11 ..... 4.95
Weirton,W.Va. W6 ..... 4.25

Wide Flange
Bethlehem,Pa. B2 ..... 4.30
Clairton,Pa. U5 ..... 4.25
Fontana,Calif. K1 ..... 5.25
Lackawanna,N.Y. B2 ..... 4.30
Munhall,Pa. U5 ..... 4.25
Phoenixville,Pa. P4 ..... 3.95
So.Chicago,Ill. U5 ..... 4.25

Alloy Stand. Shapes
Clairton,Pa. U5 ..... 5.20
Fontana,Calif. K1 ..... 6.60
Gary,Ind. U5 ..... 5.20
Munhall,Pa. U5 ..... 5.20
So.Chicago,Ill. U5 ..... 5.20

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ..... 6.40
Bessemer,Ala. T2 ..... 6.40
Bethlehem,Pa. B2 ..... 6.45
Clairton,Pa. U5 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
FontanaCalif. K1 ..... 7.05
Gary,Ind. U5 ..... 6.40
Geneva,Utah C11 ..... 6.40
Ind.Harbor,Ind. I-2, Y1 6.40
Johnstown,Pa. B2 ..... 6.45
Lackawanna,N.Y. B2 ..... 6.45
LosAngeles B3 ..... 7.10
Munhall,Pa. U5 ..... 6.40
Seattle B3 ..... 7.15
So.Chicago,Ill. U5, W14 6.40
So.SanFrancisco B3 ..... 7.05
Struthers,O. Y1 ..... 6.40

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 6.45
Lackawanna,N.Y. B2 ..... 6.45
Munhall,Pa. U5 ..... 6.40
So.Chicago,Ill. U5 ..... 6.40

PILING

Bearing Piles
Munhall,Pa. U5 ..... 4.25
So.Chicago,Ill. U5 ..... 4.25

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ..... 5.075
Lackawanna,N.Y. B2 ..... 5.075
Munhall,Pa. U5 ..... 5.075
So.Chicago,Ill. U5 ..... 5.075

PLATES

PLATES, Carbon Steel
Aliquippa,Pa. J5 ..... 4.225
Ashland,Ky.(15) A10 ..... 4.225
Bessemer,Ala. T2 ..... 4.225
Buffalo(31) R2 ..... 4.255
Clairton,Pa. U5 ..... 4.225
Claymont,Del. C22 ..... 4.225
Cleveland J5 ..... 4.225
Cleveland(31) R2 ..... 4.285
Coatesville,Pa. L7 ..... 4.225
Conshohocken,Pa. A3 ..... 4.225
Ecorse,Mich. G5 ..... 4.375
Fairfield,Ala. T2 ..... 4.225
Gadsden,Ala.(31) R2 ..... 4.255
Fontana,Calif.(30) K1 ..... 4.875
Gary,Ind. U5 ..... 4.225
Geneva,Utah C11 ..... 4.225
GraniteCity,Ill. G4 ..... 4.425
Harrisburg,Pa. C5 ..... 3.975
Houston S5 ..... 4.625
Ind.Harbor,Ind. I-2, Y1 4.225
Johnstown,Pa. B2 ..... 4.225
Lackawanna,N.Y. B2 ..... 4.225
LoneStar,Tex. L6 ..... 4.40
Mansfield,O. E6 ..... 4.225
Minnequa,Colo. C10 ..... 5.075
Munhall,Pa. U5 ..... 4.225
Newport,Ky. N9 ..... 4.225
Pittsburgh J5 ..... 4.225
Riverdale,Ill. A1 ..... 4.225
Seattle B3 ..... 5.125
Sharon,Pa. S3 ..... 4.225
So.Chicago,Ill.(31) R2 .. 4.295
So.Chicago,Ill. U5,W14 4.225
SparrowsPoint,Md. B2 .. 4.225
Steubenville,O. W10 ..... 4.225
Warren,O.(31) R2 ..... 4.265
Weirton,W.Va. W6 ..... 4.225
Youngstown(31) R2 ..... 4.275
Youngstown U5, Y1 ..... 4.225

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 ..... 6.025
Geneva,Utah C11 ..... 5.375

PLATES, Wrought Iron
Economy,Pa. B14 ..... 9.80

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 6.45
Bessemer,Ala. T2 ..... 6.45
Clairton,Pa. U5 ..... 6.45
Cleveland J5, R2 ..... 6.45
Conshohocken,Pa. A3 ..... 6.45
Ecorse,Mich. G5 ..... 6.60
Fairfield,Ala. T2 ..... 6.45
Fontana,Calif.(30) K1 .. 7.15
Gary,Ind. U5 ..... 6.45
Geneva,Utah C11 ..... 6.45
Ind.Harbor,Ind. I-2, Y1 6.45
Johnstown,Pa. B2 ..... 6.45
Lackawanna,N.Y. B2 ..... 6.45
LosAngeles B3 ..... 7.35
Munhall,Pa. U5 ..... 6.45
Pittsburgh J5 ..... 6.45
Seattle B3 ..... 7.35
Sharon,Pa. S3 ..... 6.45
So.Chicago,Ill. U5, W14 6.45
SparrowsPoint,Md. B2 .. 6.45
Youngstown U5, Y1 ..... 6.45

PLATES, Alloy
Claymont,Del. C22 ..... 5.80
Coatesville,Pa. L7 ..... 5.80
Fontana,Calif. K1 ..... 6.45
Gary,Ind. U5 ..... 5.80
Johnstown,Pa. B2 ..... 5.80
Munhall,Pa. U5 ..... 5.80
Newport,Ky. N9 ..... 5.80
Seattle B3 ..... 6.70
Sharon,Pa. S3 ..... 5.80
So.Chicago,Ill. U5, W14 5.80
SparrowsPoint,Md. B2 .. 5.80

FLOOR PLATES
Cleveland J5 ..... 5.275
Conshohocken,Pa. A3 .. 5.275
Harrisburg,Pa. C5 ..... 5.15
Ind.Harbor,Ind. I-2 ..... 5.275
Munhall,Pa. U5 ..... 5.275
So.Chicago,Ill. U5 ..... 5.275

PLATES, Ingot Iron
Ashland c.l. (15) A10 .. 4.475
Ashland l.c.l. (15) A10 4.975
Cleveland c.l. R2 ..... 4.825
Warren,O. c.l. R2 ..... 4.825

BARS

BARS, Hot-Rolled Carbon
Aliquippa,Pa. J5 ..... 4.30
Alton,Ill. L1 ..... 4.50
Atlanta,Ga. A11 ..... 4.50
Bessemer,Ala. T2 ..... 4.30
Birmingham C15 ..... 4.30
Buffalo(31) R2 ..... 4.33
Canton,O.(31) R2 ..... 4.46
Clairton,Pa. U5 ..... 4.30
Cleveland(31) R2 ..... 4.36
Ecorse,Mich. G5 ..... 4.45
Emeryville,Calif. J7 ..... 4.90
Fairfield,Ala. T2 ..... 4.30
Fairless,Pa. U5 ..... 4.45
Fontana,Calif. K1 ..... 5.00
Gary,Ind. U5 ..... 4.30
Gadsden,Ala.(31) R2 ..... 4.33
Houston S5 ..... 4.70
Ind.Harbor,Ind. I-2, Y1 4.30
Johnstown,Pa. B2 ..... 4.30
KansasCity,Mo. S5 ..... 4.90
Lackawanna,N.Y. B2 ..... 4.30
LosAngeles B3 ..... 5.00
Massillon,O. R8 ..... 4.30
Massillon,O.(31) R2 ..... 4.34
Monaca,Pa. S17 ..... 4.30
Newark,N.J. W18 ..... 4.55
NewCastle,Pa.(17) B4 ..... 5.40
Pittsburgh J5 ..... 5.40
Plymouth,Mich. P5 ..... 5.65
Putnam,Conn. W18 ..... 5.95
Readville,Mass. C14 ..... 5.95
St.Louis,Mo. M5 ..... 5.70
So.Chicago,Ill. W14 ..... 5.40
SpringCity,Pa. K3 ..... 5.85
Struthers,O. Y1 ..... 5.40
Waukegan,Ill. A7 ..... 5.40
Worcester,Mass. W19 ..... 5.85
Youngstown F3, Y1 ..... 5.40

BARS, Cold-Finished Alloy
(Turned and Ground)
Cumberland,Md.(5) C19 .. 4.65

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ..... 6.625
BeaverFalls,Pa. M12 ..... 6.625
BeaverFalls,Pa. R2 ..... 6.685
Bethlehem,Pa. B2 ..... 6.625
Buffalo B5 ..... 6.625
Camden,N.J. P13 ..... 6.80
Canton,O. T7 ..... 6.625
Carnegie,Pa. C12 ..... 6.625
Chicago W18 ..... 6.625
Canton,O. T7 ..... 5.075
Canton,O.(31) R2 ..... 5.115
Chicago(31) R2 ..... 5.145
Clairton,Pa. U5 ..... 5.075
Detroit R7 ..... 5.175
Ecorse,Mich. G5 ..... 5.225
Fontana,Calif. K1 ..... 6.125
Fairless,Pa. U5 ..... 5.225
Gary,Ind. U5 ..... 5.075
Houston S5 ..... 5.475
Ind.Harbor,Ind. I-2, Y1 5.075
Johnstown,Pa. B2 ..... 5.075
KansasCity,Mo. S5 ..... 5.675
Lackawanna,N.Y. B2 .. 5.075
LosAngeles B3 ..... 6.125
Massillon,O.(31) R2 ..... 5.115
Midland,Pa. C18 ..... 5.075
So.Chicago U5, W14 ..... 5.075
So.Duquesne,Pa. U5 ..... 5.075
Struthers,O. Y1 ..... 5.075
Warren,O. C17 ..... 5.075
Youngstown U5 ..... 5.075

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 6.45
Bessemer,Ala T2 ..... 6.45
Bethlehem,Pa. B2 ..... 6.45
Clairton,Pa. U5 ..... 6.45
Cleveland(31) R2 ..... 6.45
Ecorse,Mich. G5 ..... 6.60
Fairfield,Ala. T2 ..... 6.45
Fontana,Calif. K1 ..... 7.70
Gary,Ind. U5 ..... 6.45
Ind.Harb.,Ind. I-2, Y1 6.45
Johnstown,Pa. B2 ..... 6.45
Lackawanna,N.Y. B2 ..... 6.45
LosAngeles B3 ..... 7.15
Pittsburgh J5 ..... 6.45
Seattle B3 ..... 7.20
So.Chicago W14 ..... 6.45
So.Duquesne,Pa. U5 ..... 6.45
So.SanFrancisco B3 ..... 7.20
Struthers,O. Y1 ..... 6.45
Warren,O.(31) R2 ..... 6.45
Youngstown U5 ..... 6.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ..... 4.45

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ..... 4.30
Atlanta A11 ..... 4.50
Fontana,Calif. K1 ..... 5.00
Niles,Calif. P1 ..... 4.85
SanFrancisco S7 ..... 4.70

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ..... 5.20
Gary,Ind. U5 ..... 5.20
Houston S5 ..... 5.60
KansasCity S5 ..... 5.80
Youngstown U5 ..... 5.20

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ..... 5.40
BeaverFalls,Pa. M12 ..... 5.40
BeaverFalls,Pa.(31) R2 .. 5.46
Camden,N.J. P13 ..... 5.85
Carnegie,Pa. C12 ..... 5.40
Chicago W18 ..... 5.40
Cleveland A7, C20 ..... 5.40
Detroit R7 ..... 5.55
Detroit B5, P17 ..... 5.60
Donora,Pa. A7 ..... 5.40
Elyria,O. W8 ..... 5.40
FranklinPark,Ill. N5 ..... 5.40
Gary,Ind.(31) R2 ..... 5.47
GreenBay,Wis. F7 ..... 5.40
Hammond,Ind. L2, M13 5.40
Hartford,Conn.(31) R2 .. 5.90
Harvey,Ill. B5 ..... 5.40
LosAngeles(31) R2 ..... 6.85
LosAngeles S30 ..... 6.85
Mansfield,Mass B5 ..... 5.95
Massillon,O. R8 ..... 5.40
Massillon,O.(31) R2 ..... 5.44
Monaca,Pa. S17 ..... 5.40
Newark,N.J. W18 ..... 5.85
NewCastle,Pa.(17) B4 ..... 5.40
Pittsburgh J5 ..... 5.40
Plymouth,Mich. P5 ..... 5.65
Putnam,Conn. W18 ..... 5.95
Readville,Mass. C14 ..... 5.95
St. Louis,Mo. M5 ..... 5.70
So.Chicago,Ill. W14 ..... 5.40
SpringCity,Pa. K3 ..... 5.85
Struthers,O. Y1 ..... 5.40
Waukegan,Ill. A7 ..... 5.40
Worcester,Mass. W19 ..... 5.85
Youngstown F3, Y1 ..... 5.40

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ..... 6.625
BeaverFalls,Pa. M12 ..... 6.625
BeaverFalls,Pa. R2 ..... 6.685
Bethlehem,Pa. B2 ..... 6.625
Buffalo B5 ..... 6.625
Camden,N.J. P13 ..... 6.80
Canton,O. T7 ..... 6.625
Carnegie,Pa. C12 ..... 6.625
Chicago W18 ..... 6.625
Cleveland A7, C20 ..... 6.625
Detroit R7 ..... 6.725
Detroit P17 ..... 6.825
Detroit B5 ..... 6.825
Donora,Pa. A7 ..... 6.625
Elyria,O. W8 ..... 6.625
Gary,Ind.(31) R2 ..... 6.695
Hammond,Ind. L2, M13 6.625
Hartford,Conn.(31) R2 .. 6.925
Harvey,Ill. B5 ..... 6.625
Lackawanna,N.Y. B2 .. 6.625
LosAngeles S30 ..... 8.30
Massillon,Mass. B5 ..... 7.075
Massilon,O. R8 ..... 6.625
Massillon,O.(31) R2 ..... 6.665
Midland,Pa. C18 ..... 6.625
Monaca,Pa. S17 ..... 6.625
Newark,N.J. W18 ..... 6.80
Plymouth,Mich. P5 ..... 6.825
So.Chicago W14 ..... 6.625
SpringCity,Pa. K3 ..... 6.80
Struthers,O. Y1 ..... 6.625
Warren,O. C17 ..... 6.625
Waukegan,Ill. A7 ..... 6.625
Worcester,Mass. A7 .. 6.925
Youngstown F3, Y1 .. 6.625

BARS, Reinforcing (fabricators)
Atlanta A11 ..... 4.50
Birmingham C15 ..... 4.30
Buffalo(31) R2 ..... 4.33
Cleveland(31) R2 ..... 4.36
Emeryville,Calif. J7 .... 4.90
Fairfield,Ala. T2 ..... 4.30
Fairless,Pa. U5 ..... 4.45
Fontana,Calif. K1 ..... 5.00
Ft.Worth,Tex.(42) T4 .. 4.90
Gadsden,Ala.(31) R2 .. 4.33
Gary,Ind. U5 ..... 4.30
Houston S5 ..... 4.70
Ind.Harbor,Ind. I-2, Y1 4.30
Johnstown,Pa. B2 ..... 4.30
KansasCity,Mo. S5 ..... 4.90
Lackawanna,N.Y. B2 .. 4.30
LosAngeles B3 ..... 5.00
Milton,Pa. M18 ..... 4.30
Minnequa,Colo. C10 .... 4.75
Niles,Calif. P1 ..... 4.85
Pittsburg,Calif. C11 .... 5.00
Pittsburgh J5 ..... 4.30
SandSprings,Okla. S5 .. 5.15
Seattle B3, N14, P23 .. 5.05
So.Chicago(31) R2 .... 4.37
So.Duquesne,Pa. U5 .... 4.30
So.SanFrancisco B3 .... 5.05
SparrowsPoint,Md. B2 .. 4.30
Sterling,Ill.(1) N15 .... 4.30
Sterling,Ill. N15 ..... 4.40
Struthers,O. Y1 ..... 4.30
Torrance,Calif. C11 .... 5.00
Youngstown U5 ..... 4.30
Youngstown(31) R2 .... 4.35

BARS, Reinforcing
(Fabricated; to consumers)
Johnstown, ¼-1" B2 .. 5.70
KansasCity S5 ..... 6.50
LosAngeles B3 ..... 5.95
Marion,O. P11 ..... 5.55
Seattle N14, P23 ..... 5.95
Seattle B3 ..... 6.15
So.SanFrancisco B3 .... 6.00
SparrowsPt. ¼-1" B2 .. 5.70
Williamsport,Pa. S19 .. 5.60

RAIL STEEL BARS
Avis,Pa.(3) J8 ..... 4.25
ChicagoHts.(3) C2, I-2 4.20
ChicagoHts.(4) C2 I-2 4.30
Ft.Worth,Tex.(26) T4 .. 4.75
Franklin,Pa.(3) F5 .... 4.05
Franklin,Pa.(4) F5 .... 4.15
Marion,O.(3) P11 ..... 4.15
Moline,Ill.(3) R2 ..... 4.30
Tonawanda(3 4) B12 .. 4.30
Williamsport,Pa.(3) S19 4.30

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.80
McK.Rks.(S.R.) L5 ..10.85
McK.Rks.(D.R.) L5 ..14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
Allenport,Pa. P7 ..... 4.05
Ashland,Ky.(8) A10 .... 4.05
Cleveland J5, R2 ..... 4.05
Conshohocken,Pa. A3 .. 4.10
Detroit(8) M1 ..... 4.20
Ecorse,Mich. G5 ..... 4.20
Fairfield,Ala. T2 ..... 4.05
Fairless,Pa. U5 ..... 4.10
Fontana,Calif. K1 ... 4.825
Gadsden,Ala. R2 ..... 4.05
Gary,Ind. U5 ..... 4.05
Geneva,Utah C11 ..... 4.15
GraniteCity,Ill. G4 .... 4.25
Ind.Harbor,Ind. I-2, Y1 4.05
Irvin,Pa. U5 ..... 4.05

Kokomo,Ind. C16 .....4.15
Lackawanna,N.Y. B2 ..4.05
Mansfield,O. E6 (37) ...4.05
Mansfield,O. E6 (38) ...4.80
Munhall,Pa. U5 .....4.05
Newport,Ky. N9 .....4.05
Niles,O. N12 .....4.05
Pittsburg,Calif. C11 ....4.75
Pittsburgh J5 .....4.05
Portsmouth, O. P12 ....4.05
Riverdale,Ill. A1 .....4.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
SparrowsPoint,Md. B2 ..4.05
Steubenville,O. W10 ....4.05
Warren,O. R2 .....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5, Y1 ....4.05

SHEETS, H.R. (19 ga. lighter)
Gadsden,Ala. R2 .....5.35
Kokomo,Ind. C16 .....5.20
Niles,O. N12 .....4.95

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....6.10
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 .....6.25
Fairfield,Ala. T2 .....6.10
Fairless,Pa. U5 .....6.15
Fontana,Calif. K1 ....6.875
Gary,Ind. U5 .....6.10
Ind.Harbor,Ind. I-2, Y1 6.10
Irvin,Pa. U5 .....6.10
Lackawanna(35) B2 ...6.10
Munhall,Pa. U5 .....6.10
Pittsburgh J5 .....6.10
Sharon,Pa. S3 .....6.10
So.Chicago,Ill. U5 .....6.10
SparrowsPoint(36) B2 ..6.10
Warren,O. R2 .....6.10
Weirton,W.Va. W6 ....6.10
Youngstown U5, Y1 ....6.10

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)
Ashland,Ky.(8) A10 ....4.30
Cleveland R2 .....4.65
Ind.Harbor,Ind. I-2 ....4.30
Warren,O. R2 .....4.65

SHEETS, Cold-Rolled Steel
(Commercial Quality)
Allenport,Pa. P7 .....4.95
Cleveland J5, R2 .....4.95
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....4.95
Fairless,Pa. U5 .....5.00
Follansbee,W.Va. F4 ...4.95
Fontana,Calif. K1 ....6.05
Gary,Ind. U5 .....4.95
GraniteCity,Ill. G4 ....5.15
Ind.Harbor,Ind. I-2, Y1 4.95
Irvin,Pa. U5 .....4.95
Lackawanna,N.Y. B2 ...4.95
Middletown,O. A10 ....4.95
Pittsburg,Calif. C11 ...5.90
Pittsburgh J5 .....4.95
Portsmouth,O. P12 ....4.95
SparrowsPoint,Md. B2 ..4.95
Steubenville,O. W10 ....4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 .....4.95
Youngstown Y1 .....4.95

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....7.50
Ecorse,Mich. G5 .....7.65
Fairless,Pa. U5 .....7.55
Fontana,Calif. K1 ....8.55
Gary,Ind. U5 .....7.50
IndianaHarbor,Ind. Y1..7.50
Irvin,Pa. U5 .....7.50
Lackawanna(37) B2 ...7.50
Pittsburgh J5 .....7.50
SparrowsPoint(38) B2 ..7.50
Warren,O. R2 .....7.50
Weirton,W.Va. W6 ....7.50
Youngstown Y1 .....7.50

SHEETS, Cold-Rolled Ingot Iron
Cleveland R2 .....5.55
Middletown,O. A10 .....5.45
Warren,O. R2 .....5.55

SHEETS, Culvert (16 Ga.)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.50	....
Canton,O. R2	6.25	7.10
Fairfield T2	6.25	6.50
Gary,Ind. U5	6.25	6.50
Ind.Harbor I-2	6.25	6.50
Irvin,Pa. U5	6.25	6.50
Kokomo,Ind. C16	6.35	....
MartinsFry.,O.W10	6.25	....
Newport,Ky. N9	6.25	6.50
Pitts.,Calif. C11	7.00	....
SparrowsPt. B2	6.25	....

SHEETS, Culvert	Pure Iron
Ashland,Ky. A10	6.75
Fairfield,Ala. T2	6.50
MartinsFerry,O. W10	6.50

SHEETS, Galvanized Steel
Hot-dipped
Ashland,Ky. A10 .....5.45*
Butler,Pa. A10 .....5.45†
Canton,O. R2 .....5.45‡
Dover,O. R1 .....5.45‡
Fairfield,Ala. T2 .....5.45*
Gadsden,Ala. R2 .....5.45‡
Gary,Ind. U5 .....5.45*
GraniteCity,Ill. G4 ....5.65‡
Ind.Harbor,Ind. I-2 ....5.45†
Irvin,Pa. U5 .....5.45†
Kokomo,Ind. C16 .....5.55‡
MartinsFerry,O. W10 ..5.45*
Middletown,O. A10 ....5.45†
Newport,Ky. N9 .....5.45†
Niles,O. N12 .....5.45‡
Pittsburg,Calif. C11 ..6.20‡
SparrowsPt.,Md. B2 ..5.45‡
Steubenville,O. W10 ....5.45‡
Weirton,W.Va. W6 ....5.45*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Galvanized
High-Strength Low-Alloy Iron
Irvin,Pa. U5 .....8.20
SparrowsPoint(39) B2 ..8.20

SHEETS, Galvanized Ingot Iron
Ashland,Ky.(8) A10 ....5.70
Canton,O. R2 .....6.20

SHEETS, Galvannealed Steel
Canton,O. R2 .....5.85
Irvin,Pa. U5 .....5.85
Kokomo,Ind. C16 .....5.95†
Newport,Ky. N9 .....6.00
Niles,O. N12 .....6.00

SHEETS, Galvanized
Ingot Iron
(Hot-dipped continuous)
Ashland,Ky. A10 .....5.70
Butler,Pa. A10 .....5.70
Middletown,O. A10 .....5.70

SHEETS, Electrogalvanized
Cleveland(28) R2 .....6.30
Niles,O.(28) R2 .....6.30
Weirton,W.Va. W6 ....5.975

SHEETS, Aluminum Coated
Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ...5.375
Cleveland R2 .....5.375
Gary,Ind. U5 .....5.375
GraniteCity,Ill. G4 ....5.575
Ind.Harbor,Ind. I-2 ...5.375
Irvin,Pa. U5 .....5.375
Middletown,O. A10 ....5.375
Niles,O. N12 .....5.375
Youngstown Y1 .....5.375

BLUED STOCK, 29 ga.
Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 .....6.60
Yorkville,O. W10 .....7.375

SHEETS, Long Terne Steel
(Commercial Quality)
BeechBottom,W.Va. W10 5.85
Gary,Ind. U5 .....5.85
Mansfield,O. E6 .....5.85
Middletown,O. A10 ....5.85
Niles,O. N12 .....5.85
Weirton,W.Va. W6 .....5.85

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 .....6.25

SHEETS, Well Casing
Fontana,Calif. K1 .....6.325

STRIP

STRIP, Hot-Rolled Carbon
Allenport,Pa. P7 .....4.05
Alton,Ill. L1 .....4.225
Ashland,Ky.(8) A10 ....4.05
Atlanta A11 .....4.25
Bessemer,Ala. T2 .....4.05
Birmingham C15 .....4.05
Bridgeport,Conn.(10)S15 4.05
Buffalo(27) R2 .....4.05
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.20
Ecorse,Mich. G5 .....4.20
Fairfield,Ala. T2 .....4.05
Fontana,Calif. K1 ....4.825
Gadsden,Ala.(27) R2 ....4.05
Gary,Ind. U5 .....4.05
Houston,Tex. S5 .....4.45
Ind.Harbor,Ind. I-2, Y1.4.05
Johnstown,Pa.(25) B2...4.05
KansasCity,Mo.(9) S5 ..4.65
Lackw'na,N.Y.(25) B2..4.05
LosAngeles(25) B3 .....4.80
Milton,Pa. M18 .....4.05
Minnequa,Colo. C10 .....5.15
NewBritain(10) S15 ....4.05
N.Tonawanda,N.Y. B11.4.05
Pittsburg,Calif. C11 ....4.80
Portsmouth,O. P12 .....4.05
Riverdale,Ill. A1 .....4.05
SanFrancisco S7 .....5.00
Seattle(25) B3, P23 ....5.05
Seattle N14 .....5.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
So.SanFrancisco(25) B3.4.80
SparrowsPoint,Md. B2 ..4.05
Sterling(1) N15 .....4.05
Sterling,Ill. N15 .....4.15
Torrance,Calif. C11 ....4.80
Warren,O. R2 .....4.05
Weirton,W.Va. W6 .....4.05
Youngstown U5 .....4.05

STRIP, Hot-Rolled Alloy
Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 .....6.70
Fontana,Calif. K1 .....8.10
Gary,Ind. U5 .....6.70
Houston,Tex. S5 .....7.10
KansasCity,Mo. S5 .....7.30
LosAngeles B3 .....7.90
NewBritn.,Conn.(10)S15 6.45
Newport,Ky. N9 .....6.70
Seattle P23 .....7.80
Sharon,Pa. S3 .....6.70
So.Chicago W14 .....6.70
Youngstown U5 .....6.70

STRIP, Hot-Rolled
High-Strength Low-Alloy
Bessemer,Ala. T2 .....6.15
Conshohocken,Pa. A3 ..5.95
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....6.15
Fontana,Calif. K1 .....7.25
Gary,Ind. U5 .....6.15
Ind.Harbor,Ind. I-2, Y1.6.15
Lackawanna,N.Y. B2 ..6.15
LosAngeles(25) B3 .....6.90
Seattle(25) B3, P23 ....7.15
Sharon,Pa. S3 .....6.15
So.SanFrancisco(25) B3.6.90
SparrowsPoint,Md. B2 ..6.15
Warren,O. R2 .....6.15
Weirton,W.Va. W6 .....6.15
Youngstown U5, Y1 ....6.15

STRIP, Hot-Rolled Ingot Iron
Ashland,Ky.(8) A10 ...4.30
Warren,O. R2 .....4.65

STRIP, Cold-Rolled Carbon
Anderson,Ind. G6 .....5.75
Baltimore T6 .....5.75
Bridgeport,Conn.(10)S15 5.75
Cleveland A7, J5 .....5.75
Dearborn,Mich. D3 ....5.90
Detroit D2, M1 .....5.90
Detroit P20 .....5.95
Dover,O. G6 .....5.75
Ecorse,Mich. G5 .....5.90
Follansbee,W.Va. F4 ...5.75
Fontana,Calif. K1 .....7.65
FranklinPark,Ill. T6 ..5.85
Ind.Harbor,Ind. I-2 ....6.00
Indianapolis C8 .....5.90
Lackawanna,N.Y. B2 ...5.75
LosAngeles C1 .....7.80
Mattapan,Mass. T6 .....6.30
Middletown,O. A10 .....5.75
NewBedford,Mass. R10..6.20
NewBritain(10) S15 ....5.75
NewCastle,Pa. B4, E5 ...5.75
NewHaven,Conn. A7 ....6.50
NewHaven,Conn. D2 ....6.20
Pawtucket,R.I. R3 ....6.40
Pawtucket,R.I. N8 .....6.30
Pittsburgh J5 .....5.75
Portsmouth,O. P12 .....5.75
Riverdale,Ill. A1 .....5.85
Rome,N.Y.(32) R6 .....5.75
Sharon,Pa. S3 .....5.75
SparrowsPt.,Md. B2 ...5.75
Trenton,N.J. R5 .....7.00
Wall'ford,Conn. W2 ....6.20
Warren,O. B9, R2, T5..5.75
Weirton,W.Va. W6 .....5.75
Worcester,Mass. A7 ....6.60
Youngstown C8, Y1 ....5.75

STRIP, Cold-Rolled Alloy Steel
Carnegie,Pa. S18 .....12.45
Cleveland A7 .....12.45
Dover,O. G6 .....12.45
Fontana,Calif. K1 .....14.55
FranklinPark,Ill. T6 ..12.45
Harrison,N.J. C18 .....12.45
Mattapan,Mass. T6 ....12.80
Pawtucket,R.I. N8 .....12.80
Sharon,Pa. S3 .....12.45
Worcester,Mass. A7 ....12.75
Youngstown C8 .....12.90

STRIP, Cold-Rolled
High-Strength Low-Alloy
Cleveland A7, J5 .....8.60
Dearborn,Mich. D3 ....8.75
Dover,O. G6 .....8.60
Ecorse,Mich. G5 .....8.75
Lackawanna,N.Y. B2 ..8.425
Pittsburgh J5 .....8.60
Sharon,Pa. S3 .....8.60
SparrowsPoint,Md. B2..8.425
Warren,O. R2 .....8.60
Weirton,W.Va. W6 .....8.60
Youngstown Y1 .....8.60

STRIP, Cold-Rolled Ingot Iron
Warren,O. R2 .....6.35

TIGHT COOPERAGE HOOP
Atlanta A11 .....4.775
Riverdale,Ill. A1 .....4.625
Sharon,Pa. S3 .....4.475
Youngstown U5 .....4.475

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Div., H. K. Porter Co. Inc.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Products.
C24 G. O. Carlson Inc.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.
G2 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Corp.
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
M16 Md. Fine&Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott
N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P23 Pacific Steel Rolling
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless WeldedProducts
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet&Tube

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	5.75	8.35	9.30	11.45	14.15
Bridgeport,Conn.(10) S15.	5.75	8.05	9.30	11.15	13.85
Bristol,Conn. W1	...	...	9.30	11.45	....
Carnegie,Pa. S18	....	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland C7	...	8.05	9.00	11.15	13.85
Dearborn,Mich. D3	5.90	8.25	9.20	....	....
Detroit D2	5.90	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18	...	...	9.30	11.45	14.15
Indianapolis C8	...	8.20	9.00	10.95	....
Mattapan,Mass. T6	6.30	8.35	9.30	11.45	14.15
NewBritn.,Conn.(10) S15.	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	11.15	....
NewCastle,Pa. E5	5.75	8.05	9.00	10.95	13.25
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewYork W3	...	8.35	9.30	11.45	14.15
Pautucket,R.I. N8	6.30	8.35	9.30	11.45	14.15
Riverdale,Ill.(1) A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	5.75	8.05	9.00	10.95	13.25
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.45	14.15
Warren,O. T5	5.75	8.05	9.00	10.95	13.25
Weirton,W.Va. W6	5.85	8.05	9.00	10.95	13.25
Worcester,Mass. A7	6.60	8.35	9.30	11.45	14.15
Worcester,Mass. T6	6.30	8.35	9.30	11.45	14.15
Youngstown C8	...	8.05	9.00	10.95	13.25
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.90	15.60	....
Buffalo W12	...	...	12.90	....	....
Harrison,N.J. C18	...	...	12.90	15.60	19.00
NewYork W3	...	...	12.90	15.60	19.00
Trenton,N.J. R5	...	...	12.90	15.60	19.00
Worcester,Mass. T6	...	...	12.90	15.60	19.00
Worcester,Mass. W12	...	...	12.90	....	....
Youngstown C8	...	...	12.85	15.35	18.35

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom,W.Va W10	....	....	9.10	10.10	11.00
Brackenridge,Pa. A4	....	....	9.10	10.10	11.00
IndianaHarbor,Ind. I-2	8.025	8.50	9.10	10.10	....
Mansfield,O. E6	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	....	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	11.00
Zanesville,O. A10	....	8.50	9.10	10.10	11.00

C.R. COILS & CUT LENGTHS, (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
Brackenridge,Pa. A4	....	....	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425*	8.95*	9.55*‡	10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	....	9.25†	9.85‡	10.85‡	11.75†
Vandergrift,Pa. U5	8.225*	8.75*	9.35*‡	10.35*‡	11.25*
Warren,O. R2	8.225†	9.25	9.85	10.85	11.75
Zanesville,O. A10	....	9.25	9.85	10.85	11.75

Transformer Grade H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.95	12.50	13.00	14.00
Brackenridge,Pa. A4	11.95	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.95	12.50	13.00	14.00
Zanesville,O. A10	11.95‡	12.50‡	13.00‡	14.00‡

C.R. COILS & CUT LENGTHS	T-100	T-90	T-80	T-73	T-72
Butler,Pa. A10	....	....	16.60	17.10	....
Vandergrift,Pa. U5	14.00	15.00	16.60	17.10	12.70
Warren,O. R2	....	....	....	....	12.70‡

* Semiprocessed. † Fully processed only. ‡ Coils annealed; semiprocessed ½c lower. § Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2, 8.80	9.05	
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	8.95
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
Warren,O. R2	6.50
SparrowsPoint,Md. B2	6.60
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.10

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

WIRE

WIRE, Manufacturers Bright, Low Carbon	
Aliquippa,Pa. J5	5.75
Alton,Ill. L1	5.925
Atlanta A11	5.95
Bartonville,Ill. K4	5.85
Buffalo W12	5.75
Chicago W13	5.75
Cleveland A7, C20	5.75
Crawfordsville,Ind. M8	5.85
Donora,Pa. A7	5.75
Duluth,Minn. A7	5.75
Fairfield,Ala. T2	5.75
Fostoria,O.(24) S1	5.95
Gadsden,Ala. R2	5.75
Houston S5	6.15
Jacksonville,Fla. M8	6.27
Joliet,Ill. A7	5.75
KansasCity, Mo. S5	6.35
Kokomo,Ind. C16	5.85
LosAngeles B3	6.70
Minnequa,Colo. C10	6.00
Monessen,Pa. P7	5.75
Newark, 6-8 ga. I-1	6.40
No.Tonawanda B11	5.75
Palmer,Mass. W12	6.05
Pittsburg,Calif. C11	6.70
Portsmouth,O. P12	5.75
Rankin,Pa. A7	5.75
So.Chicago,Ill. R2	5.75
So.SanFrancisco C10	6.70
SparrowsPoint,Md. B2	5.85
Sterling,Ill.(1) N15	5.75
Sterling,Ill. N15	5.85
Struthers,O. Y1	5.75
Waukegan,Ill. A7	5.75
Worcester,Mass. A7	6.06

WIRE MB Spring, High Carbon	
Aliquippa,Pa. J5	7.20
Alton,Ill. L1	7.375
Bartonville,Ill. K4	7.30
Buffalo W12	7.20
Cleveland A7	7.20
Donora,Pa. A7	7.20
Duluth,Minn. A7	7.20
Fostoria,O. S1	7.20
Johnstown,Pa. B2	7.20
LosAngeles B3	8.15
Millbury,Mass.(12) N6	7.225
Minnequa,Colo. C10	7.45
Monessen,Pa. P7, P16	7.20
Muncie,Ind. I-7	7.40
Palmer,Mass. W12	7.50
Pittsburg,Calif. C11	8.15
Portsmouth,O. P12	7.20
Roebling,N.J. R5	7.50
So.Chicago,Ill. R2	7.20
So.SanFran. C10	8.15
SparrowsPt., Md. B2	7.30
Struthers,O. Y1	7.20
Trenton,N.J. A7	7.50
Waukegan,Ill. A7	7.20
Worcester A7, J4, T6, W12	7.50

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.90
Alton,Ill. L1	7.075
Buffalo W12	6.90
Cleveland A7	6.90
Donora,Pa. A7	6.90
Duluth,Minn. A7	6.90
Johnstown,Pa. B2	6.90
LosAngeles B3	7.85
Minnequa,Colo. C10	7.075
Monessen,Pa. P7, P16	6.90
NewHaven,Conn. A7	7.20
Palmer,Mass. W12	7.20
Pittsburg,Calif. C11	7.85
Portsmouth,O. P12	6.90
Roebling,N.J. R5	7.20
So.Chicago,Ill R2	6.90
So.SanFrancisco C10	7.85
SparrowsPoint,Md. B2	7.00
Trenton,N.J. A7	7.20
Waukegan,Ill. A7	6.90
Worcester,Mass. A7	7.20

WIRE, Fine & Weaving(8" Coils)	
Alton,Ill. L1	11.375
Bartonville,Ill. K4	11.30
Buffalo W12	11.20
Chicago W13	10.55
Cleveland A7	11.20
Crawfordsville,Ind. M8	11.30
Fostoria,O. S1	11.20
Jacksonville,Fla. M8	11.73
Johnstown,Pa. B2	11.20
Kokomo,Ind. C16	10.55
Minnequa,Colo. C10	10.95
Monessen, Pa. P16	11.20
Muncie, Ind. I-7	11.40
Palmer,Mass. W12	11.50
Roebling,N.J. R5	11.50
So.SanFrancisco C10	11.55
Waukegan,Ill. A7	11.20
Worcester,Mass. A7,T6	11.50

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.90
Buffalo W12	9.90
Johnstown,Pa. B2	9.90
Minnequa,Colo. C10	10.025
Monessen,Pa. P16	9.90
Muncie,Ind. I-7	10.10
Portsmouth,O. D2	9.90
Roebling,N.J. R5	10.20
SparrowsPt.,Md. B2	10.00

ROPE WIRE	(A)
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	9.75
Johnstown,Pa. B2	9.75
Monessen,Pa. P7	9.35
Monessen,Pa. P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.85
Struthers,O. Y1	9.75
Worcester J4, T6	6.65

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	13.25
Monessen,Pa. P16	13.15
Portsmouth,O. P12	13.15
Roebling,N.J. R5	13.45

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville,Ind. M8	8.05
Dover,O. G6	7.95
Fostoria,O. S1	7.95
Kokomo,Ind. C16	7.55
FranklinPark,Ill T6	8.05
Massillon,O. R8	7.95
Monessen,Pa. P7, P16	7.95
Pawtkt.,R.I. N8	8.25
Rome,N.Y.(32) R6	7.95
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	8.25

WIRE, Merchant Quality (6 to 8 gage)	An'ld. Galv.
Aliquippa J5	6.90 7.425‡
Atlanta A11	7.00 7.55
Bartonville(48) K4	7.00 7.55
Buffalo W12	6.90 7.30†
Cleveland A7	6.90 ....
Crawfordsville M8	7.00 7.55
Donora,Pa. A7	6.90 7.30†
Duluth,Minn. A7	6.90 7.30†
Fairfield T2	6.90 7.30†
Gadsden,Ala. R2	6.90 7.30**
Houston,Tex. S5	7.30 7.70
Jacks'ville,Fla.M8	7.425 7.95
JohnstownB2(48).	6.90 7.45*
Joliet,Ill. A7	6.90 7.30†
KansasCity,Mo. S5	7.50 7.90
Kokomo C16	7.00 7.40†
LosAngeles B3	7.85 ....
Minnequa C10	7.15 7.55**
Monessen P7 (48).	6.90 7.45
Palmer W12	7.20 7.60†
Pitts.,Calif. C11	7.85 8.25†
Portsmouth,O. P12	6.90 ....
Rankin A7	6.90 7.30†
So.Chi'go R2	6.90 7.30**
S.S.Frn. C10	7.85 8.25**
Spar'wsPt.B2(48).	7.00 7.55*
Str'g(1)(48)N15.	6.90 7.45
Struthers,O.(48)Y1	6.90 7.40‡
Worcester A7	7.20 ....

* Based on 11c zinc; † 5c zinc; ‡ Less than 10c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½Ga	Col.
Ala.City,Ala.R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga.J5	149‡
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	151
Donora,Pa. A7	146†
Duluth,Minn. A7	146†
Fairfield,Ala T2	146†
Houston,Tex. S5	154
Johnstown,Pa.(43) B2	149
Joliet,Ill. A7	146†
KansasCity,Mo. S5	158
Kokomo,Ind. C16	148†
Minnequa,Colo. C10	154**
Monessen,Pa. 9 ga. P17.	151
Pittsburg,Calif. C11	169†
Rankin,Pa. A7	146†
So.Chicago,Ill. R2	146**
Sterling,Ill.(1) N15	149

† Based on 5c zinc; * 11c zinc; § 10c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
Atlanta A11	157
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	157
Donora,Pa. A7	155
Duluth,Minn. A7	155
Fairfield,Ala. T2	155
Gadsden,Ala. R2	155
Joliet,Ill. A7	155
KansasCity,Mo. S5	167
Kokomo,Ind. C16	157
Minnequa,Colo. C10	160
Pittsburg,Calif. C11	179
So.Chicago,Ill. R2	155
So.SanFran.,Calif. C10	179
SparrowsPoint,Md. B2	157
Sterling,Ill.(1) N15	155

WIRE, Barbed	Col.
Aliquippa J5	156§
Atlanta A11	164
Bartonville,Ill. K4	164
Crawfordsville,Ind. M8	164
Donora,Pa. A7	159†
Duluth,Minn. A7	159†
Fairfield,Ala. T2	159†
Gadsden,Ala. R2	159**
Houston,Tex. S5	167
Johnstown,Pa. B2	162*
Joliet,Ill. A7	159†
KansasCity,Mo. S5	171
Kokomo,Ind. C16	161†
Minnequa,Colo. C10	165**
Monessen,Pa. P7	163
Pittsburg,Calif. C11	179†
Rankin,Pa. A7	159†
So.Chicago,Ill. R2	159**
S.SanFrancisco C10	179**
SparrowsPoint,Md. B2	164*
Sterling,Ill.(1) N15	162

† Based on 5c zinc; * 11c zinc; § 10c zinc; **Subject to zinc equalization extras.

WIRE (16 gage)	An'ld. Galv. Stone	Galv. Stone
Ala.City R2	13.15	14.70**
Aliquippa J5	12.50	14.30§
Bartonville K4	13.25	15.10
Buffalo W12	13.15	....
Cleveland A7	13.15	....
CrawfordsvilleM8	13.25	15.10
Fostoria,O. S1	13.25	14.80†
Johnstown B2	13.15	15.00*
Kokomo C16	12.60	14.15†
Minnequa C10.	13.40	15.10**
Palmer,Mass.W12	13.15	14.70*
Pitts.,Calif. C11	13.50	15.05†
So.Chicago R2	13.15	14.70
SparrowsPt. B2	13.25	15.10*
Sterling(1) N15	13.15	15.00
Waukegan A7	13.15	14.70†
Worcester A7	13.45	....

* Based on 11c zinc; † 5c zinc; § 10c zinc; ** Subject to zinc equalization extras.

NAILS, Stock To dealers & mfrs. (7)	Col.
Aliquippa,Pa. J5	137
Atlanta A11	139
Bartonville,Ill. K4	139
Chicago,Ill. W13	137
Cleveland A9	142
Crawfordsville,Ind. M8	139
Donora,Pa. A7	137
Duluth,Minn. A7	137
Fairfield,Ala. T2	137
Gadsden,Ala. R2	137
Galveston,Tex. D7	139
Houston,Tex. S5	145
Johnstown,Pa. B2	137
Joliet,Ill. A7	137
KansasCity, Mo. S5	149
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	156
Rankin,Pa. A7	137
So.Chicago,Ill. R2	137
SparrowsPt., Md. B2	139
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	143

NAILS, CUT (100 lb keg) To dealers (33)	
Conshohocken,Pa. A3	$8.30
Wheeling,W.Va. W10	8.30

STAPLES, Polished Stock To dealers & mfrs. (7)	Col.
Aliquippa,Pa. J5	138
Atlanta A11	140
Bartonville,Ill. K4	140
Crawfordsville,Ind. M8	140
Donora,Pa. A7	138
Duluth,Minn. A7	138
Fairfield,Ala T2	138
Gadsden,Ala. R2	138
Johnstown,Pa. B2	138
Joliet,Ill. A7	138
Kokomo,Ind. C16	140
Minnequa,Colo. C10	143
Monessen,Pa. P7	138
Pittsburg,Calif. C11	157
Rankin,Pa. A7	138
So.Chicago,Ill. R2	138
SparrowsPt. Md. B2	140
Sterling,Ill.(1) N15	138
Worcester,Mass. A7	144

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2.	150
Duluth,Minn. A7	150
Franklin,Pa. F5	150
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	155
Moline,Ill. R2	150
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	150
Williamsport,Pa. B19	150

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	13.5	list	17.5	0.25	20	2.75	21.5	4.25	21.5	4.25	20.75	3.5	23.25	6
Ambridge, Pa. N2 (†)	13.5	...	17.5	...	20	...	21.5	...	21.5	...	20.75	...	23.25	...
Lorain, O. N3 (*)	13.5	2.25	17.5	3.25	20	5.75	21.5	7.25	21.5	7.25	20.75	6.5	23.25	9
Youngstown Y1 (††)	13.5	+1.5	17.5	0.75	20	3.25	21.5	4.75	21.5	4.75	20.75	4	23.25	6.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	13.5	1.5	17.5	0.75	20	3.25	21.5	4.75	21.5	4.75	20.75	4	23.25	6.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		8c		8.5c		11.5c		17c		23c		27.5c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	....	...	....	....	23.75	7.5	26.75	11.5	29.25	15	31.75	16	32.25	17
Alton, Ill. L1 (§)	...	...	....	...	....	....	21.75	6.5	24.75	10.5	27.25	14	29.75	14.75	30.25	15.75
Benwood, W.Va. W10 (††)	24	+2.5	16.25	+8.25	7.25	+14.25	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Butler, Pa. F6‡‡	25	+1.5	17	+6.5	9.5	+12	....	....	....	....	....	....	....	....	....	....
Etna, Pa. N2 (†)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Fairless, Pa. N3	...	...	....	...	....	....	19.25	...	22.25	...	24.75	...	27.25	....	27.75	....
Fontana, Calif. K1 (§)	...	...	....	...	....	....	10.75	+4.5	13.75	+0.5	16.25	3	18.75	3.75	19.25	4.75
Ind. Harbor Y1 (††)	...	...	....	...	....	....	22.75	7.5	25.75	11.5	28.25	15	30.75	15.75	31.25	16.75
Lorain, O. N3 (*)	...	...	....	...	....	....	23.75	13.5	26.75	17.5	29.25	21	31.75	20.5	32.25	21.5
Sharon, Pa. S4 (‡)	25	+1.5	17	+6.5	9.5	+12	....	....	....	....	....	....	....	....	....	....
Sharon, Pa. M6	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Sparrows Pt., Md. B2 (§)	23	+3.5	15	+8.5	7.5	+14	31.75	6.5	24.75	10.5	27.25	13	29.75	14	30.25	16
Youngstown R2 (**)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Youngstown Y1 (††)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Wheatland, Pa. W9 (§)	23	+3.5	15	+8.5	7.5	+14	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75

Size—Inches	2		2½		3		3½		4	
List Per Ft	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	32.75	17.5	34.25	17.5	34.25	17.5	....	....	....	....
Alton, Ill. L1 (§)	30.75	16.25	32.25	16	32.25	16	23.25	6.75	23.25	6.75
Benwood, W.Va. W10 (††)	32.75	18.25	34.25	18	34.25	18	25.5	8.75	25.5	8.75
Etna, Pa. N2 (†)	32.75	18.25	34.25	19	34.25	19	25.5	8.75	25.5	8.75
Fairless, Pa. N3	28.25	....	29.75	....	29.75	...	21	....	21	....
Fontana, Calif. K1 (§)	19.75	5.25	21.25	5	21.25	5	12.5	+4.25	12.5	+4.25
Ind. Harbor, Ind. Y1 (††)	31.75	17.25	33.25	17	33.25	17	....	....	....	....
Lorain, O. N3 (*)	32.75	22	34.25	20.5	34.25	20.5	....	....	....	....
Sharon, Pa. M6	32.75	18.25	34.25	18	34.25	18	....	....	....	....
Sparrows Pt., Md. B2 (§)	29.75	15.5	32.25	15.5	32.25	15.5	23.5	6.25	23.5	6.25
Youngstown R2 (**)	32.75	18.25	34.25	18	34.25	18	25.5	8.75	25.5	8.75
Youngstown Y1 (††)	32.75	18.25	34.25	18	34.25	18	....	....	....	....
Wheatland, Pa. W9 (‡)	32.75	18.25	34.25	18	34.25	18	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), over 9c to 11c inclusive; (††), 10.50c-11.50c; (**), 9.50c; with discounts adjusted on price of zinc at time of shipment; (‡‡), 11c.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut length 10 to 24 ft, inclusive.

O.D. in.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1¾	13	25.28	30.31	24.52
2	13	28.33	33.97	27.48
2¼	13	31.91	38.26	30.96
2½	12	34.63	41.52	33.59
2½	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. Tee Rails All	Std. Tee Rails 60 lb Under
Bessemer, Pa. U5	4.45	4.35	4.40	5.35
Ensley, Ala. T2	4.46	4.35	....	5.35
Fairfield, Ala. T2	....	....	....	5.35
Gary, Ind. U5	4.45	4.35	4.40	....
Huntington, W.Va. W7	....	....	....	5.35
Indiana Harbor, Ind. I-2	4.45	4.35	4.40	....
Johnstown, Pa. B2	....	....	...(16)	5.35
Lackawanna, N.Y. B2	4.45	4.35	....	5.35
Minnequa, Colo. C10	4.45	4.35	....	5.35
Steelton, Pa. B2	4.45	4.35	....	5.35
Williamsport, Pa. S19	....	....	....	5.35

TIE PLATES	
Fairfield, Ala. T2	5.275
Gary, Ind. U5	5.275
Ind. Harbor, Ind. I-2	5.275
Lackawanna, N.Y. B2	5.275
Minnequa, Colo. C10	5.275
Seattle B3	5.425
Steelton, Pa. B2	5.275
Torrance, Calif. C11	5.425

TRACK BOLTS (20) Treated	
Cleveland R2	11.50
Kansas City, Mo. S5	11.50
Lebanon, Pa. B2	11.50
Minnequa, Colo. C10	11.50
Pittsburgh O3	11.50
Pittsburgh P14	11.50
Seattle, Wash. B3	12.00

JOINT BARS	
Bessemer, Pa. U5	5.425
Fairfield, Ala. T2	5.425
Ind. Harbor, Ind. I-2	5.425
Joliet, Ill. U5	5.425
Lackawanna, N.Y. B2	5.425
Minnequa, Colo. C10	5.425
Steelton, Pa. B2	5.425

SCREW SPIKES	
Cleveland R2	11.00

AXLES	
Ind. Harbor, Ind. S13	6.75
Johnstown, Pa. B2	6.75

STANDARD TRACK SPIKES	
Fairfield, Ala. T2	7.30
Ind. Harbor, Ind. I-2, Y1	7.30
Kansas City, Mo. S5	7.30
Lebanon, Pa. B2	7.30
Minnequa, Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B3	7.80
So. Chicago, Ill. R2	7.30
Struthers, O. Y1	7.30
Youngstown R2	7.30

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great. Structural ½-in., larger 9.25 7/8-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	4
⅝-in. & ¾-in.	5
⅞-in. and larger	3
Longer than 6 in.:	
All diameters	+4
Lag bolts, all diams.:	
6 in. and shorter	12
Over 6 in. long	8
Ribbed Necked Carriage	5
Blank	25
Plow	25
Step, Elevator, Tap and Sleigh Shoes	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	58
H.P., Hex, regular & heavy:	
¾" and smaller	58
⅞" to 1⅛", inclusive	60
1¼" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex regular & heavy:	
All sizes	58
Hot Galv. Nuts (all types):	
¾" to 1½", inclusive	40
1⅝" to 1½", inclusive	43
Finished Hex Nuts:	
New standard, all sizes	58
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	34
1 in. and smaller diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5—10
Plated finishes	30—10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron: 98+% Fe, annealed	18.00
Unannealed	
Minus 100 mesh	14.50
Minus 35 mesh	10.25
Minus 20 mesh	10.00
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N. J., in bags	11.25
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	22.00
Annealed, 99.5% Fe	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frgt. allowed:	
Carlots	32.00
Ton lots	34.00
Antimony, 500 lb lots	32.00*
Brass, ¼-ton lots	28.75-37.50†
Bronze, ¼-ton lots	31.00-39.00†
Copper:	
Electrolytic	13.50*
Reduced	13.50*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	89.50
Nickel-Silver, ¼-ton lots	45.75‡
Nickel-Silver, ¼-ton lots	48.50**
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.50*
Zinc, ¼-ton lots	18.25-32.00‡
Tungsten Melting grade, 99% 60 to 200 mesh:	Dollars
1000 lb and over	4.95
Less than 1000 lb	5.10
Chromium electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flat, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16": 1 7/16" to 1 15/16" 4.78c; 1 15/16" to 7 5/16" 5.15c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon and 0.35c H.S.-L.A.
(31) Base; deld. within mill county.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 gage & heavier; 60" & narrower.
(38) 14 gage & lighter.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(43) 9-14½ gage.
(48) 6-7 gage.

STAINLESS STEEL MILL PRICES

(Representative prices cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. Bars; H.R. Strip	Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	41.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	41.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	44.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	43.75	43.75
304L	....	....	36.75	....	....	42.75	45.25	49.00	49.00
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	48.00	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	62.00	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	62.75	67.50	69.00	72.25	72.25
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	53.25	55.60	59.00	62.75	62.75
316L	....	....	52.50	....	58.25	61.00	64.25	67.75	67.75
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	77.00
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	80.25	80.25
321	22.75	29.50	35.25	40.75	41.00	42.00	46.00	50.50	50.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	59.25	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	34.25	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	52.75	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	35.25	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	50.25	39.50	40.75	50.75	59.75
501	....	....	14.00	14.50	21.25	16.00	18.25	29.00	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	30.00	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg Warner Corp.; Jessop Steel Co., Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co., Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%	Sheets, Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60-28.10	32.50-32.70	32.50	77.00
310	36.50	41.00	....	144.00
316	32.60-33.10	37.70-42.75	42.75	....
318	37.00-37.50	42.20-42.70	....	....
321	29.36-29.80	34.40-37.00	37.00	111.00
347	30.40-30.90	35.50-40.50	40.50	130.00
405	23.40-23.90	30.60-31.10	....	....
410	22.90-23.40	30.10-30.60	....	....
430	23.40	30.60	....	....
Inconel	46.90	61.90	....	165.00
Nickel	38.30	51.70	....	....
Monel	39.70	52.66	....	....
Copper*	....	....	46.00	....

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	28.85	35.85	25.00	32.25

*Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; Copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.26	5% Cr Hot Work	0.405
Extra Carbon	0.31-.315	W-Cr Hot Work	0.425
Special Carbon	0.37	V-Cr Hot Work	0.445
Oil Hardening	0.405	Hi-Carbon-Cr	0.73

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	....	4.030
19	4	2	12	....	3.990
18.25	4.25	1	4.75	....	2.245-2.415
18	4	2	9	....	2.615
18	4	2	....	....	1.706
18	4	1	....	....	1.540
18	4	1	5	....	2.250
14	4	2	5	....	2.185
13.75	3.75	2	5	....	2.185
13.5	4	3	....	....	1.805
9	3.5	..	....	....	1.115
6	4	2	....	5	1.045
6	4	3	....	6	1.290
1.5	4	1	....	8.5	0.090

Tool Steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON

Gross Ton

F.o.b. furnace prices in dollars per gross tons, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	52.38	52.88	....	....
Birmingham U5	....	52.88	56.50†	....
Gadsden,Ala. R2	52.38	52.88	....	....
Woodward,Ala. W15	52.38	52.88	56.50†	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	57.50
Boston, del.	66.65	67.15	67.65	....
Rochester,N.Y., del.	59.02	59.52	60.02	....
Syracuse,N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon,Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O.; del. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
NewYork, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Birdsboro,Pa. B10	58.00	58.50	....	....
Chester,Pa. C31	48.00	48.50	49.00	....
Philadelphia, del.	49.66	50.16	50.66	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Troy,N.Y. R2	58.00	58.50	59.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Ambridge, Aliquippa, del.	57.37	57.87	57.87	58.37
McKeesRocks, del.	57.04	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, del.	57.66	58.16	58.16	58.66
Verona,Trafford, del.	58.19	58.69	58.69	59.19
Brackenridge, del.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., del.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T2	....	52.50*	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....

* Low phos. southern grade. † Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	92.00
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	95.00
Wenatchee,Wash. OH & Fdry, freight allowed K2	92.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, del.	67.55
Troy,N.Y. R2	64.00

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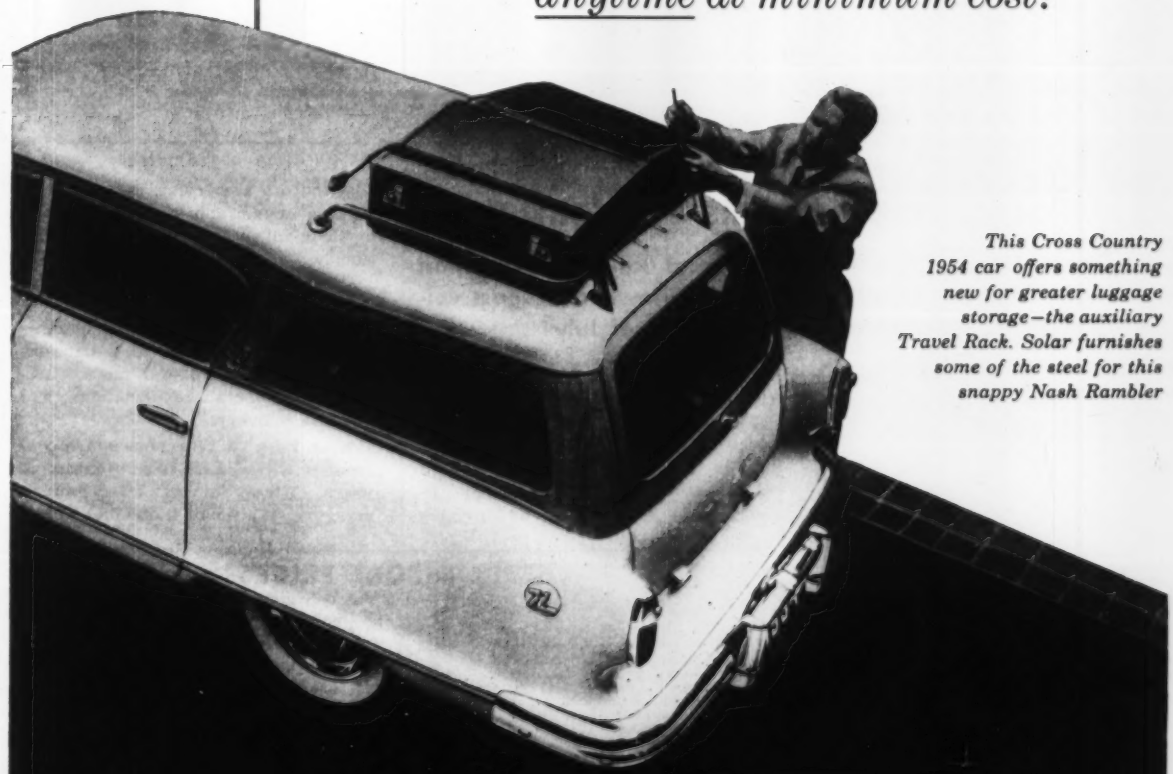
anytime at minimum cost!



This Cross Country 1954 car offers something new for greater luggage storage—the auxiliary Travel Rack. Solar furnishes some of the steel for this snappy Nash Rambler

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FLAT ROLLED AND BAR AND TUBE STOCKS AND PROCESSING SERVICES FROM 11 PLANTS

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham, St. Paul, 15 cents; Boston, Philadelphia, New York, 10 cents; Seattle and Spokane, Wash., no charge; at Buffalo and Philadelphia, on cold-finished bars and sheets, alloy bars and galvanized sheets, 25 cents.)

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302‡§	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.§	H.R. Alloy 4140††‡		Carbon	Floor
Baltimore	6.22	7.51	7.77	....	6.89	...	6.88	8.52[6]	12.04	6.92	6.57	7.96**
Birmingham	6.35	7.35	8.25[3]	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.52	44.75[3]	7.47	...	7.20	8.60	12.45	7.49	7.37	8.50
Buffalo	6.35	7.40	8.79	....	6.70	...	6.50	7.85	12.15	6.77	6.70	7.80
Carnegie, Pa.	6.38	...	8.30	....	6.72	...	6.51	7.85	12.15	6.72	6.65	6.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	45.55	6.62	...	6.51	7.50	11.90	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.25	45.80	6.86	...	6.75	7.80	12.15	6.86	6.81	7.89
Cleveland	6.38	7.38	8.45	45.66	6.72	...	6.57	7.60	11.96	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.79	12.10	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45[4]	....	6.69	6.52	7.64
Houston	7.35	7.80	9.93	....	7.70	9.30	7.70	9.50	....	7.35	7.35	8.75
Los Angeles	7.40	9.25	9.80	50.15	7.75	11.75	7.35	10.05	13.20	7.65	7.35	9.45
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.69	11.99	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.85	....	6.81	6.87	...
New York	6.97	7.91	8.79	44.45	7.56	...	7.37	8.73[6]	10.53	7.38	7.27	8.65
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.29	8.08	41.98[9]	6.96	8.80	6.74	8.19[6]	11.96	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	45.50	6.72	...	6.51	7.85	11.90	6.69	6.52	7.64**
Portland, Oreg.	7.60	8.75	9.70	48.50	7.85	...	7.55	10.95	14.00	7.50	7.45	9.35
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.33	....	7.06	6.65	8.06
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.89	12.19	7.09	6.81	7.93
St. Paul	7.03	8.03	8.96	....	7.28	...	7.16	8.26	....	7.12	7.19	8.30
San Francisco	7.55	8.95	9.35	48.15	7.80	...	7.35	10.05	13.20	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	50.50	8.20	...	7.80	10.95	13.65	7.75	7.80	9.60
Spokane	8.35	9.65[7]	10.05	....	8.30	...	7.80	10.85[8]	14.40	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.37	...	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extras excluded); ‡includes 35-cent special bar quality extra; §as rolled; **¼-in. and heavier; ††as annealed. ‡‡prices include $2 for crating; Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over, except in Seattle where base is 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston where base is 10,000 lb. [2]—500 to 9999 lb; [4]—4000 lb and over; [5]—1000 to 1999 lbs; [6]—1000 lb and over; [7]—1500 lb to 3999; [8]—under ¼ in.; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

Warehouse Trade Begins To Reawaken

Distributors in Pittsburgh, Boston and San Francisco report more inquiries, if not more orders. Elsewhere August volume shows little improvement over that of July

Pittsburgh — Gains continue in warehouse sales. Distributors say inquiries are increasing more rapidly than tonnages shipped, and the outlook is improving for September. All consuming groups are sharing in the improving volume, warehousemen say.

Sales of sheet and cold-finished bars are slowest among commodities distributed. Construction products are moving quickly.

Boston — The slight improvement in demand for steel from warehouses does not include cold-finished sheets. Bars, structurals and plate orders are heavier, but small individually. This is attributed to some buying by consumers, who are resuming production after vacation shutdowns, in need of fill-in stocks. While distributors have booked slightly more mill orders for September shipment, most are still buying on a monthly replacement basis. Tubing specialties and tool steel are moving slowly.

Philadelphia — Doldrums continue for district distributors who are striving to hold on through vacation periods. August has shown practically no turn one way or the other, though the first half of August is normally worse than July. New price sheets on cold finished bars are not contemplated as new freight rates are 18 cents lower, nearly offsetting the mill increase of 20 cents. Distributors are trying to get rid of surplus items and are filling holes in their inventories slowly and cautiously.

Cincinnati—August business is slow as had been expected. Steel inventories at consuming points apparently have been reduced to a hand-to-mouth basis. More and more warehouse customers are demanding immediate delivery.

New York — Warehouses are confronted with keenest competition in years. Three factors effect profit margins: (1) Small individual orders

STEEL IMPORT PRICES

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast*
Deformed Bars, Intermediate, ASTM-A-305	$4.95	$4.95	$4.85	$5.23
Bar Size Angles	4.65	4.65	4.55	4.93
Structural Angles	4.65	4.65	4.55	4.93
I-Beams	4.50	4.50	4.40	4.73
Wide Flange Beams	4.80	4.80	4.80	5.06
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.50	5.50	5.45	5.78
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	26.80	27.00	26.80	27.60
Barbed Wire	6.00	6.00	6.00	6.23
Merchant Bars	5.00	5.00	5.00	5.33
Hot-Rolled Bands	5.15	5.15	5.10	5.43
Wire Rods, Thomas Commercial No. 5	4.80	4.87	4.85	5.12
Wire Rods, O-H, Cold Heading Quality No. 5	5.23	5.30	5.28	5.55
Bright Common Wire Nails, 8d	6.85	6.95	6.90	7.15

*Not including $2.20 per net ton customarily charged in most West Coast ports for wharfage and handling.

Sizes OD				
Seamless A.P.I. Casing, Grade J-55:				
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.50/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing:				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅞ in.	6.5	0.80/ft	0.83/ft	0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

for which distributors are competing; (2) combination small orders direct to mills, including lots down to 5000 pounds on some products, including cold-finished bars and; (3) foreign steel, standard carbon products, plates, shapes and bars.

August volume is no heavier than that of July. Alloys are slow with stainless moving in steady volume.

San Francisco — Most steel users have used up just about all of their inventories and prospects are this will be reflected soon in increased buying at the warehouse and mill levels.

Los Angeles—Although warehouse activity for August is well below preceding months, the yearly sales volume for the first seven months of 1954 was 10 to 15 per cent above the like period last year. Activity is expected to climb when the vacation period ends.

Seattle—Downward trend of sales made by distributors has been aggravated by the two-month strike of loggers and mill workers in this area where the forest products industry contributes so much to the general economy. Warehouses report business is markedly less than a year ago, conditions worsening the last two months with the strike in progress. Construction continues active and, as soon as current labor troubles are composed, buying is expected to increase rapidly. Jobbers report inventories complete, all items being in good supply, and prompt deliveries the general rule.

Fluorspar Outlook Brightens

Cleveland—Proposed purchase by government of an undisclosed tonnage of metallurgical fluorspar for the strategic stockpile is expected to give the depressed market for this material something of a lift.

Last week General Services Administration was directed by the Office of Defense Mobilization to buy fluorspar concentrates from domestic firms only. This directive is seen by some trade authorities as a move to help the domestic mines, which, for months past, have been struggling to keep going in the face of low-priced imported spar and curtailed steelmaking operations.

Currently domestic material is quoted $35 to $36, net ton, carload, on 72.5 per cent grade, $32 to $33 on 70 per cent and, $28 to $29 on 60 per cent. These prices contrast with $28 to $30, duty paid, on European spar, and $25.50, duty paid, on Mexican material.

Upturn Still Eludes Sheet Markets

August volume hasn't picked up from July—worst month so far this year in the East. Sheetmakers expect some improvement by September, more by October

Sheet and Strip Prices, Page 144 & 145

New York—August business is not living up to expectations for sheetmakers, though they feel they'll hit the bottom this month. A gain from July, worst month this year (June generally was tops) wasn't expected. Factors contributing to slowness are: Overbuying in June in anticipation of a steel strike, continued vacations in fabricating plants and a tendency of buyers to "wait and see" on fall business. One district seller points out that after ten days of August, September bookings were about 45 per cent of August bookings; mills like to have about 30 days on new orders.

Inventory picture of customers is more balanced, and warehouse stocks have rounded into better shape.

September delivery is possible on everything except galvanized sheets, excluding the heavy gages. Spot openings on mill schedules can allow two to three week delivery on some products, though four weeks is more normal. More interest is noted in coated products, silicon steels and electrical sheets.

Philadelphia — "September will show a marked improvement in our needs," say two big sheet users in the district. This optimism has not yet been translated into heavy tonnage on producers' order books, though. Bulge in demand is possible in TV work; kitchen equipment producers are holding their own. Hot-rolled carbon plates can be worked into first rolling schedules, meaning two to three-week delivery. Pickled hot-rolled sheets take a little longer and cold-rolled sheets require about five to six weeks. Deliveries on galvanized products have become more extended, with 5-6 weeks required for conventional hot-dip sheets and 8-10 for continuous hot-dip sheets.

Fairless Works set two new industry-wide production records during July, reports A. J. Berdis, general superintendent. The 80-inch continuous pickling line produced at the average rate of 932 tons per 8-hour turn. This bettered the previous record held by U. S. Steel's Gary sheet and tin mill of 920 tons, established in November, 1953. During the month, also, the Fairless Works' 4-high sheet temper mill chalked up an average of 739 tons per 8-hour shift, to break the record of 711 tons per turn recorded by U. S. Steel's Irvin Works in February, 1953.

Chicago—Sheetmakers are awaiting orders of automakers to boost their production schedules for both hot and cold-rolled material, but indications are these won't materialize as soon as originally expected. Thinking now is for October and November. Some independent carbuilders have substantial inventories to work off before placing new orders.

Boston—Sheet and strip consumers should be showing more interest in September tonnage, if expected improvement in shipments next month materializes. On volume being placed, prompt shipment is a basic factor in buying; forward commitments are slow. Consumers, including stampers, supplying the automotive trade with parts report slow operations; the low point may be reached next month, or before requirements in volume are known for the new car models. Cold strip converters are buying sparingly and mainly fill-in lots for prompt shipment. Only users of galvanized material are buying for October-November shipment. Bonderized galvanized sheets are

Front and Center

Steel strapping played an important role in construction of a 718-mile oil pipeline from Edmonton, Alta., to Vancouver, B. C. Made by Acme Steel Co., Chicago, the strapping was used to secure the pipe in transit from San Francisco to Decoigne, Alta., above; to secure protective wrappings; and for other uses during installation

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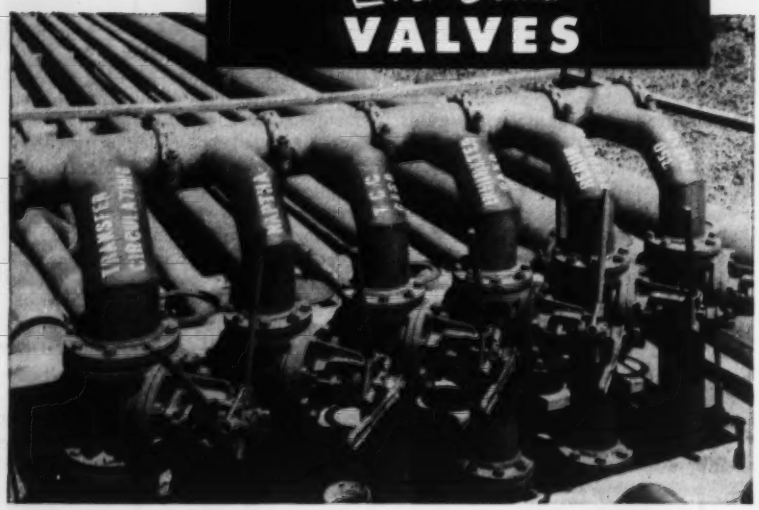

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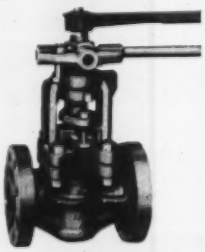

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making headway against galvannealed and various grades of electrocoated stock.

Pittsburgh—Reduction in automotive purchases of sheet is expected to continue into early September. Buying by distributors and many other classes of customers is still dull. While cold-finished sales show no over-all pickup from last month, the strip market is strengthening.

Cincinnati—Sheet and strip production has declined in this area. Mills are operating at one of the low points of the year. Delivery of galvanized sheets out of mills has been extended due to the expanded government's grain bin program. This has given warehouses more business.

Steel Bars . . .

Bar Prices, Page 144

Cleveland — Republic Steel Corp. issued a revised extra card on hot-rolled carbon steel bars and small shapes, effective Aug. 11. The new card supersedes that in effect since Feb. 2, this year.

In addition to incorporating a number of changes in chemical requirements extras, particularly open hearth resulphurized specifications, several new extras are added, including 85 cents per 100 pounds for shell steel and cold-extrusion quality, and 5 cents per 100 pounds for check analysis on government specifications.

Chicago—A somewhat higher manufacturing level for farm equipment in the midwest should result in improved demand for hot-rolled and cold-finished bars. Eased requirements during past two months or so have put many bar mills on reduced turns and their deliveries on a pretty prompt basis.

Boston—Uneven improvement in cold-finished bar orders for September shipment comes chiefly from screw machine product users; for gears, buying is confined to operating requirements with slight interest directed toward higher inventory.

The Boston naval yard will forge 985 tons of large diameter alloy bars for die lock anchor chains to be used on supercarriers now under contract. Stainless steel items, including chain, required for 11 minesweepers being built at New England yards, will be bought by yard suppliers rather than directly by the shipbuilders.

New York—"We can make first rolling on any bar order. That holds down the line to alloys and cold-drawn bars." This statement from a district sales official sums up the situation here. Alloy bar business isn't

time to be bold

Orders harder to get? Competitive pressure increasing?

> Where is the management who won't agree it's time to urge the sales force to fight harder—to step up its sales calls—to develop more new customers?

Grabbing the initiative in times like these is what makes new leaders. The company that steps out boldly today capitalizes on competitive weakness. It pushes volume to win a larger share of available business. It improves its industry position and challenges old line leaders.

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It hits—and hits hard with everything it's got. It demands that its advertising work harder—that its impact be increased—that its contacts be stepped up. Alert management today is giving advertising *more* jobs to do, in order that its sales force can become *more productive.* Has your company raised its sights to fight harder with advertising?

THE PENTON PUBLISHING COMPANY

PENTON BUILDING • CLEVELAND 13, OHIO

expected to rebound as much as other products in September because of automakers' model changeovers.

Philadelphia — Timing of rolling schedule and section desired determines how fast you can get bar deliveries. Two to four weeks is average; seldom would delivery run over a month.

Pittsburgh—Specialty bar sales are sluggish. Producers of most bar products are waiting out this month in expectation of a fall upswing.

Carbon steel barmakers expect improvements in fourth quarter orders from automakers to affect September sales favorably.

Tubular Goods . . .

Tubular Goods Prices, Page 147

Orange, Tex.—U. S. Steel's Consolidated Western Steel Division has begun producing 36-in. diameter pipe at its plant here. The division's first order is for 50 miles of pipe for Transcontinental Gas Pipe Line Corp. of Houston. This brings a new dimension to long distance overland transportation of natural gas and oil. Generally, 30 in. pipe is used, although one gas transmission system has 34 in. pipe.

Chicago — Nikoh Tube Co. announced a revision in its price schedule on electric welded steel tubing, effective July 26. Changes effected were both upward and downward.

Pittsburgh — Producers of oil country goods expect no decline in oil drilling in the second half of this year. Output of seamless tubular products for gas and oil wells should continue near capacity for four months.

Structural Shapes . . .

Structural Shape Prices, Page 144

Chicago — Midwest building construction, commercial in particular, has outpaced national volume this year, but some slowing down is observed. Order backlogs of structural fabricators are shortening. However, new projects appear at a good clip. Illinois and Indiana highway work next year looms heavy with a considerable number of bridges.

New York—Fabricators' business is still holding up well, primarily because of high construction activity. This influence is also felt in reinforcing bars. Bridgework continues the big factor among fabricators.

Boston—A contract for 5015 tons of fabricated structural steel to be used in construction of Western Electric Co.'s plant in North Andover, Mass., is the largest industrial tonnage placed in months. Ingalls Iron Works, Birmingham, will fabricate the steel.

Pending bridge volume is heavier, including substantial built-up girder tonnage for a grade crossing elimination in Winchester, Mass.

Philadelphia—Fabricators report a fair amount of work available, but bidding is keener and profit margins slimmer. Normal backlog runs about three to four months, with some shops reporting slightly longer periods. Prices haven't stiffened or shown improvement.

Pittsburgh—The trend to increased wide flange beam sales continues, but standard structural shapes sales are diminishing slightly.

Bridge building demands more structural steel than most other commercial and industrial projects in this area, partly accounting for increased requirements of lightweight beams.

Los Angeles—For the first time this year, structural activity is booming. Letting of several large construction jobs has ended, at least for the present, the depressed structural picture in this area.

San Francisco — Contract awards on engineering projects, while down from a year ago, are holding at a lively pace, sustaining demand for building steels.

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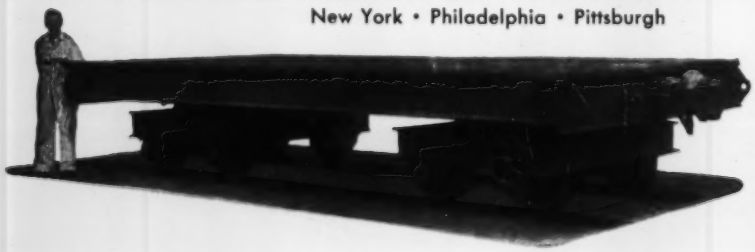

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

5015 tons, manufacturing plant, Western Electric Co., North Andover, Mass., to Ingalls Iron Works Co., Birmingham, Ala.

1150 tons, state office building, Augusta, Me., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through Joseph Rugo Co., Boston, general contractor.

425 tons, partial tonnage, state highway bridges, Dedham-Wellesley-Norwood, Mass., to Builders Iron Works, Somerville, Mass.; A. V. Taurasi Co., Inc., Somerville, general contractor.

400 tons or more, structurals and bars, service building and warehouse, Central Maine Power Co., Portland, Me., to Bancroft & Martin Rolling Mills Co., South Portland, Me.; F. W. Cunningham & Son, Portland, general contractor.

300 tons, including plates, addition to Centralia, Wash., municipal power plant, to Star Iron & Steel Co., Tacoma, Wash.; Scheumann & Johnson, Seattle, general contractors.

270 tons, American Water Works Service Co. Inc., water tank for Alton, Ill., to Chicago Bridge & Iron Co., Chicago.

200 tons, addition to building, York Corp., York, Pa., from I. Reindollar & Son, York, to Bethlehem Steel Co., Bethlehem, Pa.

180 tons, bottling plant addition to Olympia Brewing Co., Olympia, Wash., to Isaacson Iron Works, Seattle; A. G. Homann, Lacy, Wash., general contractor.

150 tons, for Courier-Post newspaper plant, Camden, N. J., from Hughes-Foulkrod Co., to Belmont Iron Works, Philadelphia.

105 tons, high school building, Newark, Del., from Ruppert Construction Co., Wilmington, Del., to Delaware Steel Fabricating Corp., Wilmington.

100 tons, factory building, Harrisburg, Pa., from Spera Construction Co., to Dauphin Steel & Engineering Co., Harrisburg.

(Please turn to page 156)

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carbon and alloy, stainless steel, copper,
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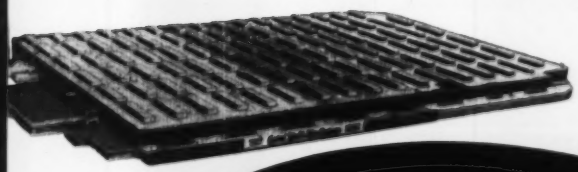

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WELD WITH ARCOS STAINLESS RODS AND ELECTRODES

(*Continued from page* 154)

100 tons, Pennsylvania department of highways, bridge, Carbon county, from Depue & Diehl, to Weatherly Steel Co.

100 tons, structurals and bars, state highway bridge, New Ashford, Mass., to West End Iron Works, Cambridge, Mass., and Northern Steel, Inc., Medford, Mass.; Petricca Construction Co., Pittsfield, Mass., general contractor.

100 tons plus, control and oil houses, Chief Joseph dam, to John M. King Co., Tacoma, Wash., by Bonneville Power Administration, Portland, Oreg.

100 tons plus, hangar doors for Boeing Airplane Co.'s flight center, Moses Lake, Wash., to International Steel Co., Evansville, Ind.

STRUCTURAL STEEL PENDING

1715 tons, grade crossing elimination, Winchester, Mass.; C. J. Maney Co., Boston, low; general contract, $4,239,921.

1230 tons, Chester county bridges, Pennsylvania State Highway & Bridge Authority, Harrisburg, bids Aug. 27.

1065 tons, Washington state Skagit river bridge, Mt. Vernon; bids to Olympia, Aug. 31.

800 tons, Lit Bros. department store, Camden, N. J.; bids Aug. 25.

560 tons, Pennsylvania Turnpike Commission, Harrisburg, section 356 of Northeast Extension; bids Aug. 31.

225 tons, beam bridge, Pennsylvania department of highways, Harrisburg, LR 3, section 3; due Aug. 27.

240 tons, galvanized steel substation materials; bids in to Bonneville Power Administration, Portland, Oreg.

145 tons, Pennsylvania railroad, bridge repairs, bridge 1.90; Delaware Steel Fabricating Corp., Wilmington, Del., low bidder.

100 tons, galvanized, Fargo substation, Missouri Basin project, North Dakota, bids to Bureau of Reclamation, Denver.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1500 tons, Seattle postoffice terminal, to Bethlehem Pacific Coast Steel Corp., Seattle; Howard S. Wright & Co. Inc., Seattle, general contractor.

900 tons, Woodrow Wilson High School, Portland, Oreg., to Soule Steel Co., Portland.

900 tons, 9th and University, Seattle, 18-story apartment, to Bethlehem Pacific Coast Steel Corp., Seattle; L. E. Baldwin Inc., Seattle, general contractor.

600 tons, two underpasses, Soldiers' Field road, Charles River reservation, Boston, to Bethlehem Steel Co., Bethlehem, Pa.; Coleman Bros. Corp., Boston, general contractor.

500 tons, Washington state Mt. Vernon railroad overpass, to Bethlehem Pacific Coast Steel Corp., Seattle; Dahlgren Construction Co., Seattle, general contractor.

250 tons, Oregon state Willamette river bridge, to Truscon Steel Co., Portland.

200 tons, Nisqually power unit for Centralia, Wash., to James D. English Steel Co., Tacoma, Wash.; Scheumann & Johnson, Seattle, general contractor.

200 tons, Massachusetts state job, to U. S. Steel Supply Co., Cambridge, Mass., through Joseph Rugo Co., Boston, general contractor.

100 tons, Blake, Moffitt & Towne Co. paper warehouse and office, Seattle, to Soule Steel Co., Seattle.

REINFORCING BARS PENDING

1500 tons, various Oregon state highway projects, bids opened at Portland, Aug. 9 and 10.

1500 tons, 40 Oregon road projects; bids opened and general contracts awarded Aug. 10 and 11 by state highway commission.

1075 tons, substructure, viaduct, Newark, N. J., contract N-8; bids in to New Jersey Turnpike Authority, New Brunswick, N. J.

750 tons, alterations to Puget Sound Navy yard drydock; bids opened by 13th naval district, Seattle, Aug. 17.

550 tons, Washington state Skagit river bridge; bids to Olympia, Aug. 31.

300 tons, University of Oregon dental building, Portland; general contract awarded.

175 tons, two state bridges, Killingly, Conn.; bids Aug. 23 to Hartford, Conn.

170 tons, bridge deck, Passaic river bridge, Clifton-East Paterson, N. J.; bids Sept. 2,

state highway authority, Trenton, N. J.; also 13,300 pounds wrought iron scuppers.
156 tons, various Washington state road projects; bids to Olympia, Aug. 17.
100 tons, various Washington state road projects; bids to Olympia, Aug. 31.

PLATES . . .

PLATES PLACED

2500 tons, eight grain storage tanks for Portland Commission of Public Docks, to American Pipe & Construction Co., Portland, Oreg.
1000 tons, miscellaneous tanks and pipe contracts, to American Pipe & Construction Co., Portland, Oreg.
800 tons, Bureau of Reclamation Avondale project, Idaho, to Beall Pipe & Tank Corp., Portland, Oreg.
500 tons, 14,000 feet 12¾ and 14 inch water system pipe for Bend, Oreg., to Beal Pipe & Tank Corp., Portland, Oreg.
500 tons, water system supply pipe (completed) Hillsboro, Oreg., to Beal Pipe & Tank Corp., Portland, Oreg.
480 tons, tank work, Copeland Oil Co., Plattsburg, N. Y., to Chicago Bridge & Iron Co., Chicago.
225 tons, three tanks, Maguire Air Base, Wrightstown, N. J., through D. J. Sucarelli & Co., general contractor, to Atlas Steel Construction Co.
150 tons, water tank, Helena, Mont., to Hammond Iron Works, Provo, Utah.
130 tons, naval shipyard, Puget Sound, Wash., to Columbia-Geneva Steel Division, U. S. Steel Corp., Seattle.
120 tons, water and oil tanks, air base, Portsmouth, N. H., through Central Heating & Plumbing Co., Boston, general contractor, to Bethlehem Steel Co., Bethlehem, Pa.
110 tons, hull plates, Navy Purchasing Office, Washington, to Wickwire-Spencer Steel Division, Colorado Fuel & Iron Corp., Wilmington, Del.

PLATES PENDING

125 tons, twelve welded 10,000-gallon gasoline storage tanks, installation section 2 and 4, Garden State parkway, contract 188; bids Sept. 2, New Jersey Highway Authority, Trenton, N. J.
100 tons plus, water storage tank, Renton, Wash.; Hammond Iron Works, Provo, Utah., low.
100 tons plus, flight center tanks, Moses Lake, Wash.; bids to Boeing Airplane Co., Seattle, Aug. 31.
100 tons, elevated storage tank, Richland water district, Portland, Oreg.; bids Aug. 25.
100 tons, 800 ft 36-in. water pipe, river undercrossing; bids to Anacortes, Wash., Aug. 24.

PIPE . . .

CAST IRON PIPE PLACED

450 tons, 16 to 6 in., system expansion, Renton, Wash.; to U. S. Pipe & Foundry Co., Seattle.

CAST IRON PIPE PENDING

100 tons, 10,200 ft 6 and 4-in. pipe and fittings; bids to King County District No. 49, Seattle, Aug. 20.
100 tons; bids opened at Wenatchee, Wash., Aug. 16 and bids to Alaska Public Works, Juneau, Alaska, Sept. 1 for system expansion at Ketchikan, Alaska.

STEEL PIPE PLACED

110 tons, fabricated pipe, Esso Standard Oil Co., Bayway, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Union Pacific, 50 diesel freight locomotives to Electro-Motive Division, General Motors Corp., La Grange, Ill. Cost estimated at about $8,600,000.
Union Pacific, fifty 1750-hp diesel freight locomotives to Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Toledo, Peoria & Western, four steel caboose cars, to own shops.

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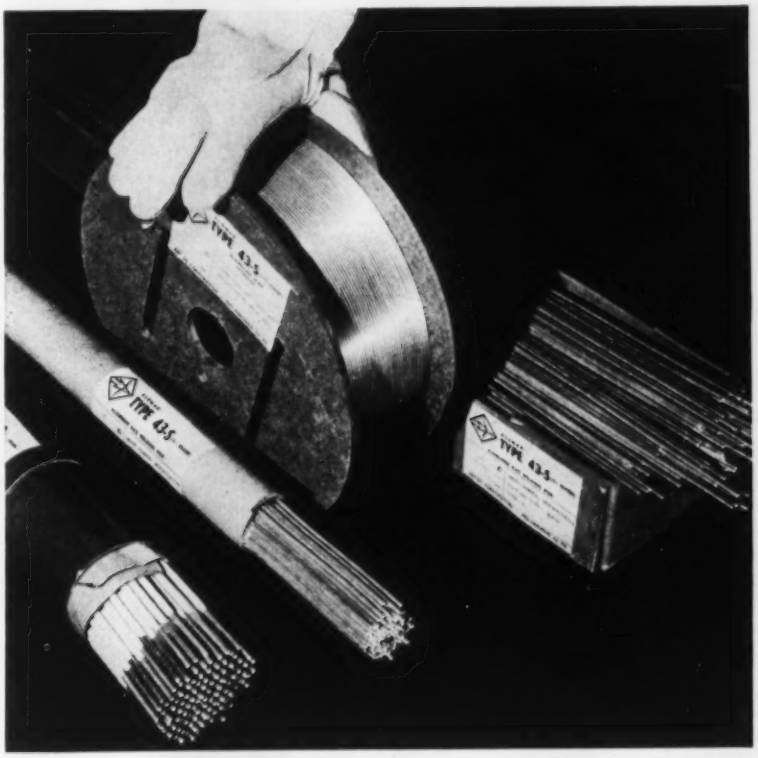

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CURRENT FERROALLOY QUOTATIONS

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MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.; add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 199 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.00c per lb or alloy, carload packed, 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 8.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, C.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max, 0.025% C (Simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 10.8c per pound of contained silicon; 1" x down, bulk 25.25c per pound of contained chromium plus 11c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D; packed, max 0.50%, carload $1.12, ton lots $1.14; less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 10.80c per lb of contained Si, carload packed 12.40c, ton lot 13.85c, less ton 15.5c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 12.2c per pound contained silicon; carload packed 13.55c; ton lots, 14.75c; less ton, 16.1c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.8c per lb of contained Si, carload packed 15.1c, ton lot 16.25c, less ton 17.5c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ⅛ lb of Si). Contract, c.l. bulk 12.65c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.3c per lb of briquet. Packed c.l. 7.10c, ton lot 7.9c, less ton 8.8c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.45c. Packed c.l. 7.25c, ton lot 8.05c, less ton 8.95c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $9.50 per lb of contained Cb, less ton $9.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigio, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, Pa., $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

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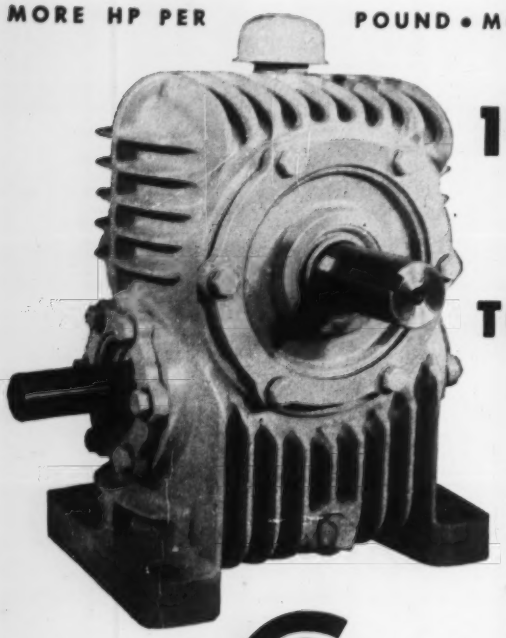

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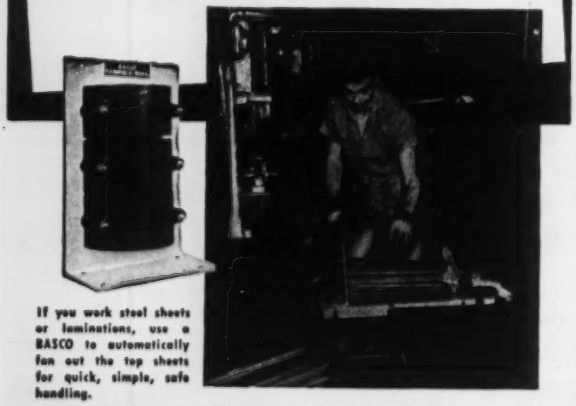

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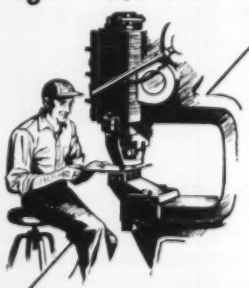

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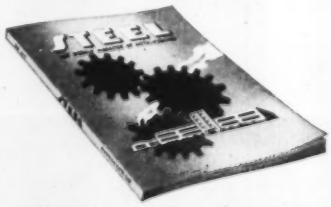

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ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	20.00
N. African hematite (spot)	nom. 20.00-22.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite, good commercial quality	$24.00-$25.00
Domestic scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, $1.02-$1.05 per long ton unit c.i.f. U. S. ports, duty for buyer's account: 46-47%, 93c-95c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $40.00-$42.00
48% 3:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	nom. 34.00

Domestic
(Rail nearest seller)

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb, Mo content mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$3.80-$4.20
60-65%	4.65-4.75

Vanadium Ore

Cents per lb. V_2O_5 content, deld. mills

Domestic	31.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109; Salina, Pa., $114; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, Niles, O., Hays, Pa., $120; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala. $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa. $174; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179; Danville, Ill., $169.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $225; Danville, Ill., $258; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburner bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-$15.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, deld.	28.12
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.00
Swedeland, Pa., ovens	23.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net ton, duty paid, metallurgical grade: European, $28-$30; Mexican, $25.50.

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Diam.	Inches Length	Per 100 lb
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5½	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12, 10	60	10.30
8	60	10.55

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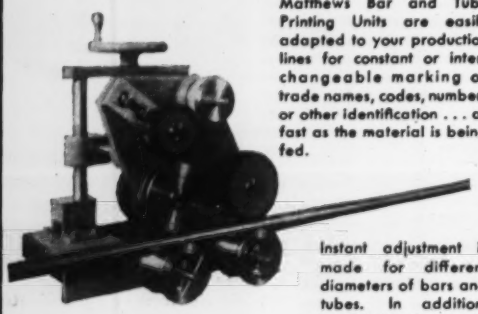

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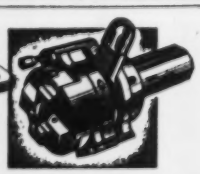

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Scrap Markets Strengthened by Exports

Shipments of scrap to European markets are holding up prices in the East. Most significant aspect of domestic buying is lack of purchasing by biggest consumers

Scrap Prices, Page 164

Philadelphia — Export demand is making itself felt in district scrap prices, with nearly all grades up 1 cent or more in the week. Mills are not operating at a level requiring heavy scrap intake and big consumers actually are absorbing only limited amounts. If they get any scrap at all, they must compete with exporters for it. Heavy tonnages moving to Europe are forcing the price to rebound; if export demand died, the price bubble would burst. Domestic buyers are attempting to meet the export quotations to a limited extent.

Boston—Slightly firmer price tone has developed in short shoveling turnings and borings and turnings. The movement of scrap for export supports recent firmness in No. 1 heavy melting and bundles at $19, shipping point, 40-ton minimum shipments depending on freight. This export volume also has lowered heavy yard stocks in some instances.

Demand for foundry grades is slow. Many shops are operating without any material inventory, taking in nearby truck shipments as needed.

Already a surplus area in production of steel scrap, this situation will be emphasized by loss of ingot production at Worcester, Mass. As a matter of fact, little scrap has been bought by the largest Worcester consumer for several months.

New York—Heavy melting steel scrap prices have firmed, up 50 cents per ton, on strong buying for export. Some estimates are orders have been taken for close to 500,000 tons, a substantial part of which is yet to be shipped. Orders are widely distributed for European shipment with some tonnage destined for South America. This has been boon to yards carrying top heavy stocks. Domestic buying of steel scrap is dull with inventories for current operating rates a retarding factor.

Foundries are buying only limited quantities of cast.

Chicago—Scrap market here remains dull and its price structure unchanged. A recent out-of-the-district sale of machine shop turnings at $15 and short shoveling turnings at $17 failed to push Chicago district prices to that level. Same grades here are $1 a ton less. Steelmaking rate at 68.5 per cent of capacity and ample scrap inventories restrict trading volume. Foundry scrap also is in slow demand.

Pittsburgh—Trading is dull in blast furnace and open-hearth grades of scrap. One major consumer here has made no volume purchases in four weeks. No. 1 grade of railroad scrap rose $1 to $32-$33 in the latest rail lists. Railroad specialties also increased $1, but there was declining activity in rails.

Buffalo—Steady undertone prevails in the scrap market here as dealers continue to ship against old orders placed within current price ranges. Also supporting the market are additional sales to Valley buyers of No. 1 material at present quotations. Dealers' optimism is restrained, however, by ample mills' reserve stocks and a lower ingot production rate.

Cleveland—Prices on better grades of scrap, including No. 1 heavy, advanced last week. Supply of these grades is not sufficient here to cover needs, forcing brokers to bring in material from distant points (up to $10 to $12 freight). This shortage is attributed in part to the fact railroads have reduced work crews and are not shipping as much material. Under present circumstances, any substantial gain in demand will be reflected in a price rise. Due to the lag in industrial activity, however, the trade is generally pessimistic.

St. Louis—Scrap receipts, orders and deliveries remain extremely light, with prices nominal. But dealers are beginning to stockpile what little excess metal they can get, indicating a belief prices will strengthen within the next 30 days. Railroad offerings, especially rerollers, are dwindling rapidly as they curtail replacement work. Many have canceled fourth quarter orders for new rails; others have postponed deliveries. Car repair and dismantling have declined, too, with the decrease in carloadings. Scant offerings sent brokers' buying prices on rerolling rails $2 higher last week to $45.

San Francisco—Most encouraging sign in the scrap market here is the stability of prices in the face of sluggish demand. A small producer in the area still is strike-bound, further reducing the demand for steel scrap.

Los Angeles—Dealers are unconcerned over reports of a heavy influx of offshore scrap. Noting that demand, not price, is the market's basic weakness, they point to recent increased mill purchases as evidence that local dealers will come in for their share of sales when the market loosens.

Seattle—While scrap is not too plentiful, except bundles which are in over-supply, dealers report business quiet and volume of sales below normal. The large buyers are carrying smaller inventories as conditions do not demand forward stocking.

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Aug. 18	$29.00
Aug. 11	28.50
July Avg.	27.42
Aug., 1953	43.40
Aug., 1949	20.86

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	29.00-30.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Cut structurals, 5 ft l'gths	31.00-32.00
Heavy turnings	26.00-27.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	30.00-31.00

Cast Iron Grades

No. 1 cupola	34.00-35.00
Charging box cast	32.00-33.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	23.00-24.00
No. 1 machinery cast	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	*32.00-33.00*
Rails, 2-ft and under	*42.00-43.00*
Rails, 18-in. and under	*43.00-44.00*
Rails, random lengths	*36.00-37.00*
Railroad specialties	*35.00-36.00*

Stainless Steel Scrap
(F.o.b. shipping point)

18-8 bundles & solids	165.00-170.00
18-8 turnings	85.00-90.00
430 bundles & solids	65.00-70.00
430 turnings	50.00-52.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	*28.00-29.00*
No. 2 heavy melting	25.00-26.00
No. 1 bundles	*28.00-29.00*
No. 2 bundles	23.00-24.00
No. 1 busheling	*28.00-29.00*
Machine shop turnings	12.00-13.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Low phos.	*29.00-30.00*
Cut structural plate 2 ft and under	32.00-33.00
Alloy free, short shovel turnings	16.50-17.50
Electric furnace bundles	*29.00-30.00*

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Charging box cast	26.50-27.50
Stove plate	33.00-34.00
Heavy breakable cast	25.50-26.50
Unstripped motor blocks	25.00-26.00
Brake shoes	29.00-30.00
Clean auto cast	*43.00-44.00*
No. 1 wheels	*35.00-36.00*
Burnt cast	27.00-28.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00
R.R. malleable	41.00-42.00
Rails, 3-ft and under	43.00-44.00
Rails, 18 in. and under	45.00-46.00
Rails, random lengths	40.00-41.00
Cast steel	34.00-35.00
Railroad specialties	34.00-35.00
Uncut tires	36.00-37.00
Angles, splice bars	41.00-42.00
Rails, rerolling	45.00-46.00

Stainless Steel
(F.o.b. shipping point)

18-8 bundles, solids	nom. 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	*30.00-31.00*
No. 2 heavy melting	26.00-27.00
No. 1 bundles	*30.00-31.00*
No. 2 bundles	24.00-25.00
Machine shop turnings	13.00-14.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Low phos.	*31.00-32.00*
Electric furnace bundles	*31.00-32.00*

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*27.50*
No. 2 heavy melting	*25.50*
No. 1 bundles	*27.50*
No. 2 bundles	*21.00-22.00*
No. 1 busheling	*27.50*
Electric furnace bundles	*28.50*
Machine shop turnings	*16.00*
Mixed borings, turnings	16.00
Short shovel turnings	*19.00*
Structurals & plate	29.00-30.00
Heavy turnings	*24.00-25.00*
Couplers, springs, wheels	*32.00-33.00*
Rail crops, 2 ft & under	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	*35.00-36.00*
Malleable	37.00*
Heavy breakable cast	*36.00-36.50*
Unstripped motor blocks	nom.
Drop broken machinery	*41.00-42.00*

*Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*21.00-21.50*
No. 2 heavy melting	*18.00-18.50*
No. 1 bundles	21.00
No. 2 bundles	15.00-15.50
Machine shop turnings	6.00-7.00
Mixed borings, short turnings	9.00-10.00
Low phos. (structural & plate)	22.00-23.00
Short shovel turnings	10.00-11.00

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	19.00-20.00*

Stainless Steel

18-8 sheets, clips, solids	170.00-175.00
18-8 borings, turnings	70.00-75.00
430 sheets, clips, solids	40.00
410 sheets, clips, solids	30.00

*Nominal.

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	18.50-19.00
No. 2 heavy melting	*15.00-15.50*
No. 1 bundles	18.00-19.00
No. 2 bundles	*14.00-15.00*
Mixed borings, turnings	*8.50-9.50*
Machine shop turnings	4.00-5.00
Short shovel turnings	*10.00-11.00*
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
Mo. 1 machinery cast	32.00-33.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	25.50-26.50
No. 2 heavy melting	22.50-23.50
No. 1 bundles	25.50-26.50
No. 2 bundles	19.00-20.00
No. 1 busheling	25.50-26.50
Machine shop turnings	11.00-12.00
Mixed borings, turnings	14.50-15.50
Short shovel turnings	14.50-15.50
Cast iron borings	14.50-15.50
Low phos. 18-in.	32.00-33.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	35.00
Charging box cast	36.00
Drop broken machinery	44.00

Railroad Scrap

No. 1 R.R. heavy melt.	30.00-31.00
Rails, 18-in. and under	43.00-44.00
Rails, random lengths	35.00-36.00

CHICAGO

No. 1 heavy melting	29.00-31.00
No. 2 heavy melting	27.00-28.00
No. 1 factory bundles	31.00-32.00
No. 1 dealer bundles	28.00-29.00
No. 2 bundles	22.00-23.00
No. 1 busheling	29.00-31.00
Machine shop turnings	*14.00-15.00*
Mixed borings, turnings	*16.00-17.00*
Short shovel turnings	*16.00-17.00*
Cast iron borings	*16.00-17.00*
Cut structurals, 3-ft	32.00-33.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	31.00-32.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Stove plate	28.00-29.00
Unstripped motor blocks	24.00-25.00
Clean auto cast	37.00-38.00
Drop broken machinery	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
R.R. malleable	40.00-42.00
Rails, 2-ft. and under	43.00-44.00
Rails, 18-in. and under	44.00-45.00
Angles, splice bars	37.00-38.00
Rails, rerolling	44.00-45.00

Stainless Steel Scrap

18-8 clips & solids	130.00-140.00
18-8 turnings	60.00
430 clips & solids	40.00
430 turnings	20.00-25.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	22.50
No. 2 heavy melting	18.50
No. 1 bundles	23.50
No. 2 bundles	16.50
No. 1 busheling	21.50
Machine shop turnings	7.00
Mixed borings, turnings	7.00
Short shovel turnings	9.00
Punchings & plate scrap	24.00

Cast Iron Grades

No. 1 cupola	33.00
Charging box cast	27.00
Stove plate	29.00
Heavy breakable	23.00
Unstripped motor blocks	18.00
Clean auto cast	37.00
Malleable	28.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-27.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	16.50-17.00
Short shovel turnings	17.50-18.00
Cast iron borings	16.50-17.00
Low phos.	28.00-28.50

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	35.00-36.00
No. 1 machinery	39.00-40.00

Railroad Scrap

Rails, random lengths	33.00-34.00
Rails, 3-ft and under	40.00-41.00
Railroad specialties	34.50-35.50

BIRMINGHAM

No. 1 heavy melting	19.50-20.50
No. 2 heavy melting	18.50-19.50
No. 1 bundles	18.00-19.00
No. 2 bundles	16.00-17.00
Cast iron borings	15.00-16.00
Short shovel turnings	16.00-17.00
Machine shop turnings	15.00-16.00
Electric furnace bundles	26.00-27.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	43.50-44.50
Stove plate	40.50-41.50
Bar crops and plate	29.00-30.00
Structural plate 2 ft	29.00-30.00
Unstripped motor blocks	35.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt.	26.00-27.00
Rails, 18-in. and under	40.00-41.00
Rails, rerolling	39.00-40.00
Angles, splice bars	36.00-37.00
Stand. steel axles	35.00-36.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	25.50
No. 2 heavy melting	23.50
No. 1 bundles	25.50
No. 2 bundles	19.25
Machine shop turnings	11.00
Short shovel turnings	13.00

Cast Iron Grades

No. 1 cupola	37.00
Charging box cast	29.00
Heavy breakable cast	29.00
Unstripped motor blocks	29.00
Brake shoes	30.00
Clean auto cast	39.00
Stove plate	31.00

Railroad Scrap

No. 1 R.R. heavy melt.	30.25
Rails, 18-in. and under	40.00
Rails, random lengths	37.00
Rails, rerolling	*45.00*
Uncut tires	32.50
Angles, splice bars	33.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	25.00
No. 2 heavy melting	21.00
No. 1 bundles	21.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Machine shop turnings	11.50
Mixed borings, turnings	11.50
Short shovel turnings	11.50
Electric furnace, No. 1	32.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	30.00-35.00
Heavy breakable cast	25.00
Unstripped motor blocks	23.00
No. 1 wheels	21.00
Stove plate (f.o.b. plant)	28.00
Brake shoes	28.00

Railroad Scrap
(Delivered consumer plant)

Rails, random lengths	30.00-34.00

LOS ANGELES

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	20.00
No. 2 bundles	16.00
Machine shop turnings	5.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	38.00-42.00

SAN FRANCISCO

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 1 busheling	20.00
Machine shop turnings	5.00
Mixed borings, turnings	5.00
Short shovel turnings	9.00
Cast iron borings	9.00
Cut structurals	25.00
Heavy turnings	9.00
Punchings & plate scrap	25.00
Electric furnace bundles	19.00

Cast Iron Grades

No. 1 cupola	43.00-48.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

HAMILTON, ONT.

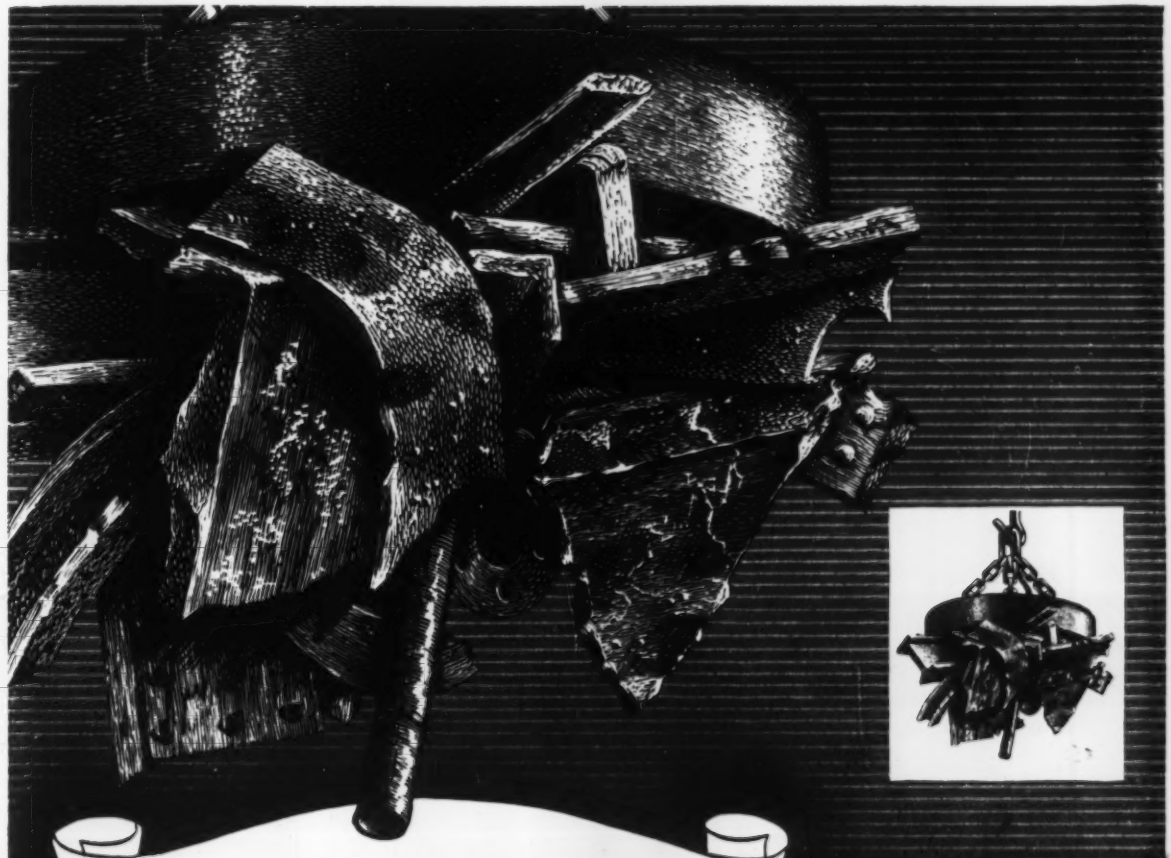
(Delivered prices)

No. 1 heavy melting	$22.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	17.00
Mixed steel scrap	16.00
Mixed borings, turnings	12.00
Rails, remelting	32.00
Busheling, new factory: Prepared	20.00
Unprepared	16.00
Short steel turnings	12.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.



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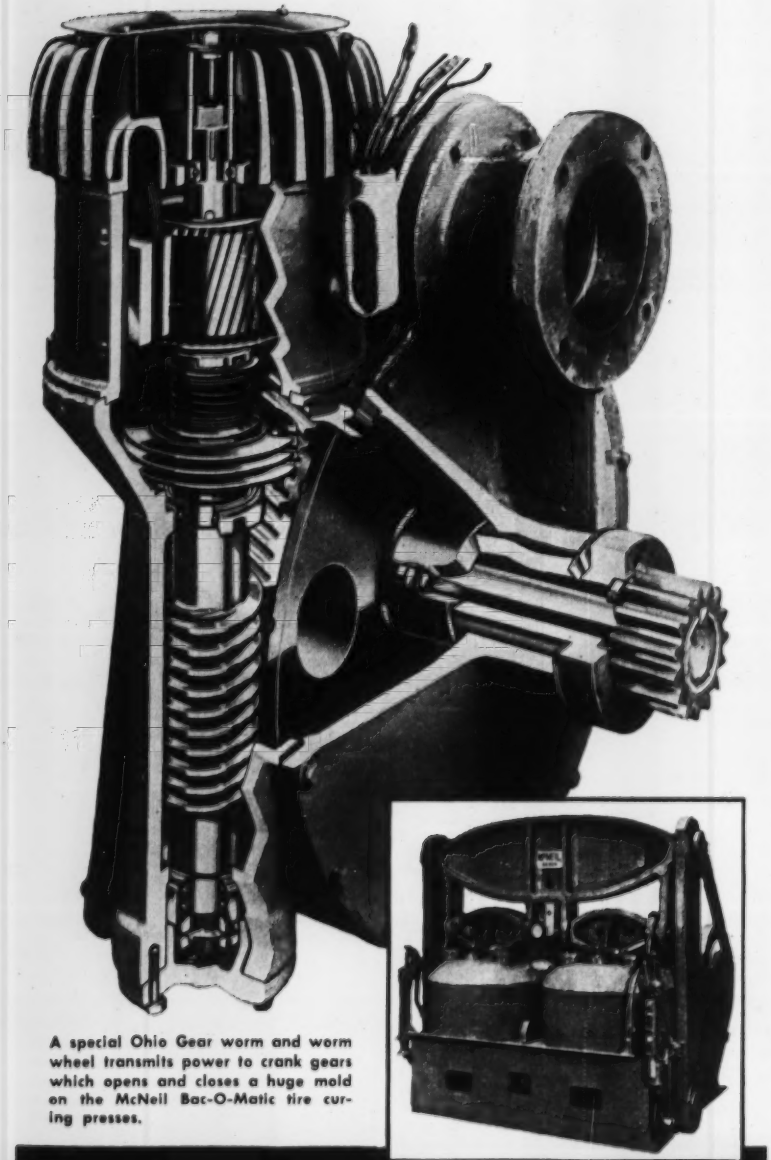

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Reinforcing Bars . . .

Reinforcing Bar Prices, Page 144

Chicago—Sales of reinforcing steel continue at a brisk clip—one that exceeds most other steel products. This is due to a good volume of commercial building construction and highway work. Both fields are expected to continue active next year.

Plates . . .

Plate Prices, Page 144

Philadelphia—Close to stock delivery is possible on plates, with business behind historical summer patterns without improvement or downgrade. Fabricators have found it a slow summer. Though inquiries to fabricators are more frequent, actual orders haven't appeared. In fact, the past two weeks have been even slower than July. Some Navy tonnage is coming in, particularly for the *Saratoga,* but other possible ships have to go through engineering stages before they can help bring business.

Boston—Plate requirements for the fourth quarter should be slightly heavier for most fabricating shops with the possible exception of small tank builders. Outlook for the latter is not too dismal, although backlogs are sagging and several shops are stocking small tank sizes. Weldment orders are mainly for lighter and medium-weight structurals and are being placed on a hand-to-mouth basis. Structural demand for built-up girders is heavier, enhanced by inquiry for structural plate arch bridges.

New York—Heavy machinery manufacturers are still the most attractive source of heavy plate orders. Repair work in shipyards is holding up, but on new work the yards are still stagnant. Mills are getting more plate orders that in recent years would be placed with warehouses.

Pittsburgh—That large proportion of plate buying represented by railroads continues dormant. Increasing percentages of steel shipments consist of structural shapes and pipe—commodities which can best be shipped by other means of transportation, so railroads have lower freight car requirements.

Los Angeles—Despite district reports of lagging mid-summer steel activity, platemakers are generally optimistic. Producers have closed September books; increased inquiries foreshadow a more active fourth quarter.

Seattle—Plate fabricators report business slow and competition more

pronounced. Current projects up for figures involve small tonnages. Small shops are running short of backlogs.

Wire . . .

Wire Prices, Page 146

New York—Moderate improvement in wire demand for fourth quarter, increase in orders starting next month is predicated on lower consumer inventories and pickup in buying of end-use products.

Orders for finished good have not bulged to the extent many users can be certain of their wire requirements.

New York — Greater imports of nails are reported in the past two weeks, but the volume isn't as heavy as at times in the past. Prices are lower than domestic quotations.

Boston—On meager wire buying, early shipment is usually specified; August shipments will improve slightly, if any, and incoming volume for September drags. Heavier buying for October is indicated with users more definite as to what tonnages will be needed.

Pittsburgh—Upward trend continues in manufacturers' wire, with producers expecting this gain to continue next month. The fall buying season for merchant trade products should bolster sales of a currently fair-moving product.

Chicago—August orders for manufacturers' wire are not showing much improvement over July, due mainly to vacation influences. Upturn in September is anticipated. Wire rope sales are off because of heavy buying early in the year.

Tin Plate . . .

Tin Plate Prices, Page 146

Pittsburgh — Tin plate shipments continue the gradual decline that had been expected for this month. Producers remain optimistic about the long-term outlook, and one area plant completed a modernization program in its tin mill. Capacity and operating speed of two electrolytic tin plating lines were increased in the project reported last week by Weirton Steel Co. at Weirton, W. Va.

New York—Tin mill products are strong. One producer reports July production the best ever but some September openings for some items. Secondary market on tin mill products (rejects) remains very tight, one order for nearly 3000 tons reportedly going begging last week.

San Francisco — Capacities of can making plants in this territory are taxed to the limits. Demand exceeds the supply and there is a rash of expansions going on.

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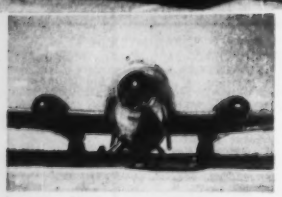
Penton Building Cleveland 13, Ohio

USAF... Martin B-57's ARE Alodized WITH ALODINE® No. 1200 for EXTRA PROTECTION



View of a modern "Alodine" No. 1200 installation at the Glenn L. Martin Company plant, Baltimore, Md. In these dip tanks, aluminum components of the USAF B-57 (top) are protectively treated with American Chemical Paint Company's "Alodine" No. 1200.

Alodizing creates a durable bond for paint, and greatly enhances aluminum's natural corrosion resistance, particularly in salt air. Alodizing meets the requirements of Military Specification MIL-C-5541, and was adopted by Martin after a long test period.

Pioneering Research and Development Since 1914

AMERICAN CHEMICAL PAINT COMPANY

CHEMICALS ACP PROCESSES

AMBLER, PA.

CHEMICALS ACP PROCESSES

DETROIT, MICH. NILES, CALIF. WINDSOR, ONT.

Pig Iron . . .

Pig Iron Prices, Page 148

Boston—There is nothing in sight to indicate any substantial improvement in demand for pig iron in this district. Numerous small foundries, including jobbing shops, are operating with practically no inventory. To the extent these shops experience a better demand for castings in the fourth quarter, shipments of iron will increase.

Buffalo—Nearly 90 per cent of current pig iron production is being used for steel output. Demand for merchant iron remains at a low level. Vacations and inventory stocks are factors. One producer's operations are still affected by a strike.

Philadelphia — Other producers have not followed the lead of the Chester, Pa., producer in lowering prices (see STEEL, Aug. 16, p. 159) and appear to have no immediate thought of so doing.

Chicago—Pig iron producers and sellers are convinced the low point in consumption for the year is passed. Shipments for August are larger and further gain in September is indicated.

Cincinnati — Pig iron demand is sketchy. Foundries are ordering only for their immediate needs. Foundrymen don't hope for much business in the third quarter.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 161

Youngstown—A new 76-oven, by-products coke battery went into operation at the Campbell Works of Youngstown Sheet & Tube Co. on Aug. 12. It has a daily capacity of 1250 tons of coke, or about 450,000 tons a year.

Iron Ore . . .

Iron Ore Prices, Page 161

Cleveland—Lake Superior iron ore shipments totaled only 2,201,884 tons for the week ended Aug. 16 compared with 3,451,759 tons for the like week a year ago. The cumulative total for the season to date is 38,031,-054 tons, off sharply from the 58,-077,283-ton total for the like 1953 period.

Rails, Cars . . .

Track Materials, Prices, Page 147

New York — Despite the recent Lackawanna order for 1000 freight cars, there's no feeling of an upturn in car building. One western road is holding back on an extensive gondola car repair program because it has plenty on hand for present needs.

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UPSON-WALTON

drop-forged clips

ENGINEERED FOR SAFETY

Heavy, steel U-bolt; hot galvanized after threading to prevent weakening from rust or corrosion.

Clip bases drop-forged under close supervision in accurately made dies. Bases made of high grade forging steel and hot galvanized.

American Standard heavy hex nut... hot galvanized for long life.

Upson-Walton drop-forged steel clips are made to the highest standards of quality for tough, heavy-duty service. *See your distributor* for quick and efficient service from stock. Write for free catalog on wire rope fittings

THE UPSON-WALTON CO.

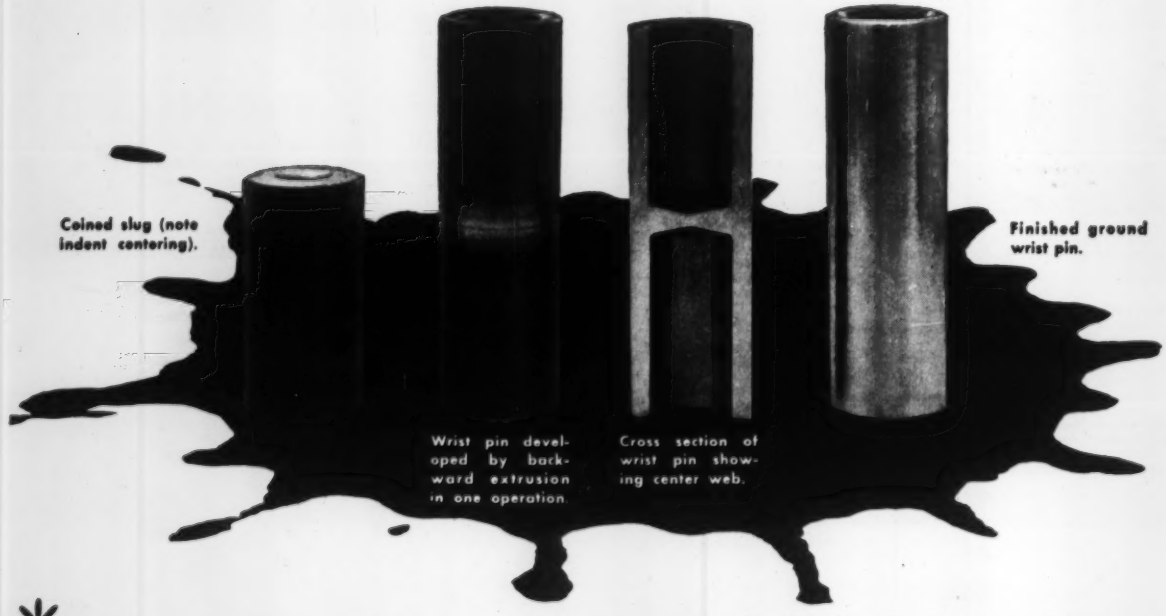
12500 ELMWOOD AVENUE • CLEVELAND 11, OHIO

New York • Chicago • Pittsburgh

YOU CAN DEPEND ON UPSON-WALTON'S 81 YEARS OF EXPERIENCE

Manufacturers of ALL TYPES ... WIRE ROPE • ROPE FITTINGS • TACKLE BLOCKS

*Bonderite


Coined slug (note indent centering).
Finished ground wrist pin.
Wrist pin developed by backward extrusion in one operation.
Cross section of wrist pin showing center web.

*as a separating layer and lubricant carrier is the key to the success of COLD FORMING

Present day deep draws and cold extrusions were labeled "impossible" just a few years ago. Tool design, production techniques and lubrication have improved. Especially lubrication.

Treatment with Bonderite and Bonderlube has been the key to successful production of extruded parts large and small.

Investigate extrusion, using Bonderite and Bonderlube. Get savings through less expensive raw materials, reduction of scrap, improved physicals, less machining, reduced operations.

Draw on Parker's unique store of knowledge and experience in extrusion. Call in the Parker representative.

**Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U.S. Pat. Off.*

Send for your FREE copy on company letterhead.

"The Influence of Proper Lubrication on the Design of Cold Extruded Components." Illustrated, detailed, authoritative discussion by two Parker extrusion experts.

Since 1915—leader in the field

PARKER
RUST PROOF COMPANY

2158 E. Milwaukee, Detroit 11, Michigan

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces

How a steel company saves money on blast furnace lubrication

FARVAL—
Studies in Centralized Lubrication
No. 155

TWICE a year, this furnace used to shut down. Lubrication by hand couldn't keep the packing at the seal on the distributor properly greased to prevent gas leakage. Every time, it took 6 men working 4 hours to change the packing. Estimated production loss of each shutdown amounted to enough to pay for a Farval system.

Management Turns to Farval

In 1952, management had a Farval automatic system of centralized lubrication installed with ground control. Since then, the 2-year record shows this: Not a single furnace shutdown due to inadequate lubrication! The seal packing on the distributor hasn't hardened and hasn't been changed once! In fact, the packing looks and works as well now as the day it was first installed. In addition, Farval has eliminated the former accident hazards present in climbing around furnace tops to oil by hand.

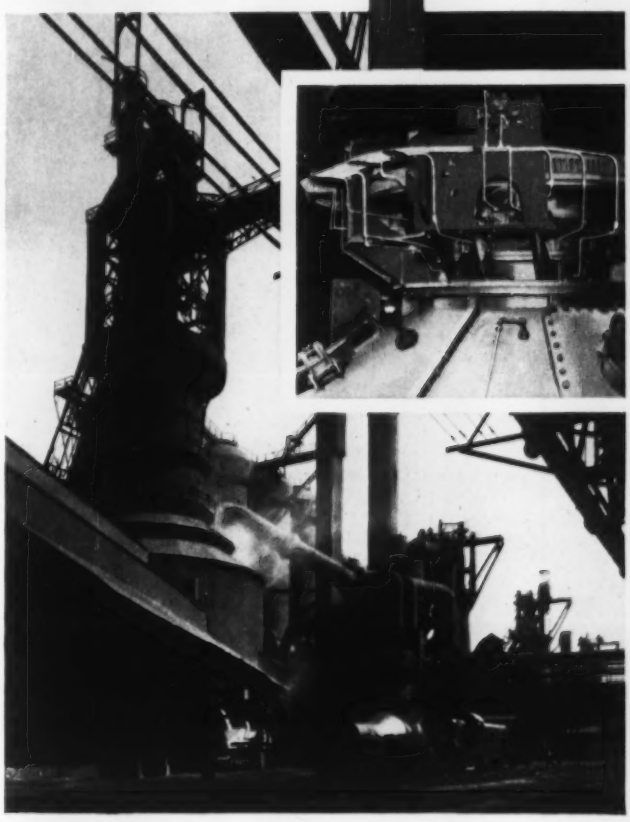
This is one of more than a hundred Farval systems on blast furnaces. First installed on a blast furnace in 1930, Farval now protects 80 furnaces in America and 30 in other countries.

How Farval Works

Farval is the foolproof Dualine system of centralized lubrication that hydraulically delivers a measured amount of clean lubricant at regular intervals to all bearings, *never missing any.* The Farval valve is simple and sure, with wide ports engineered to deliver the *exact* amount of lubricant required. There are no springs, ball-checks or pinhole ports to cause trouble.

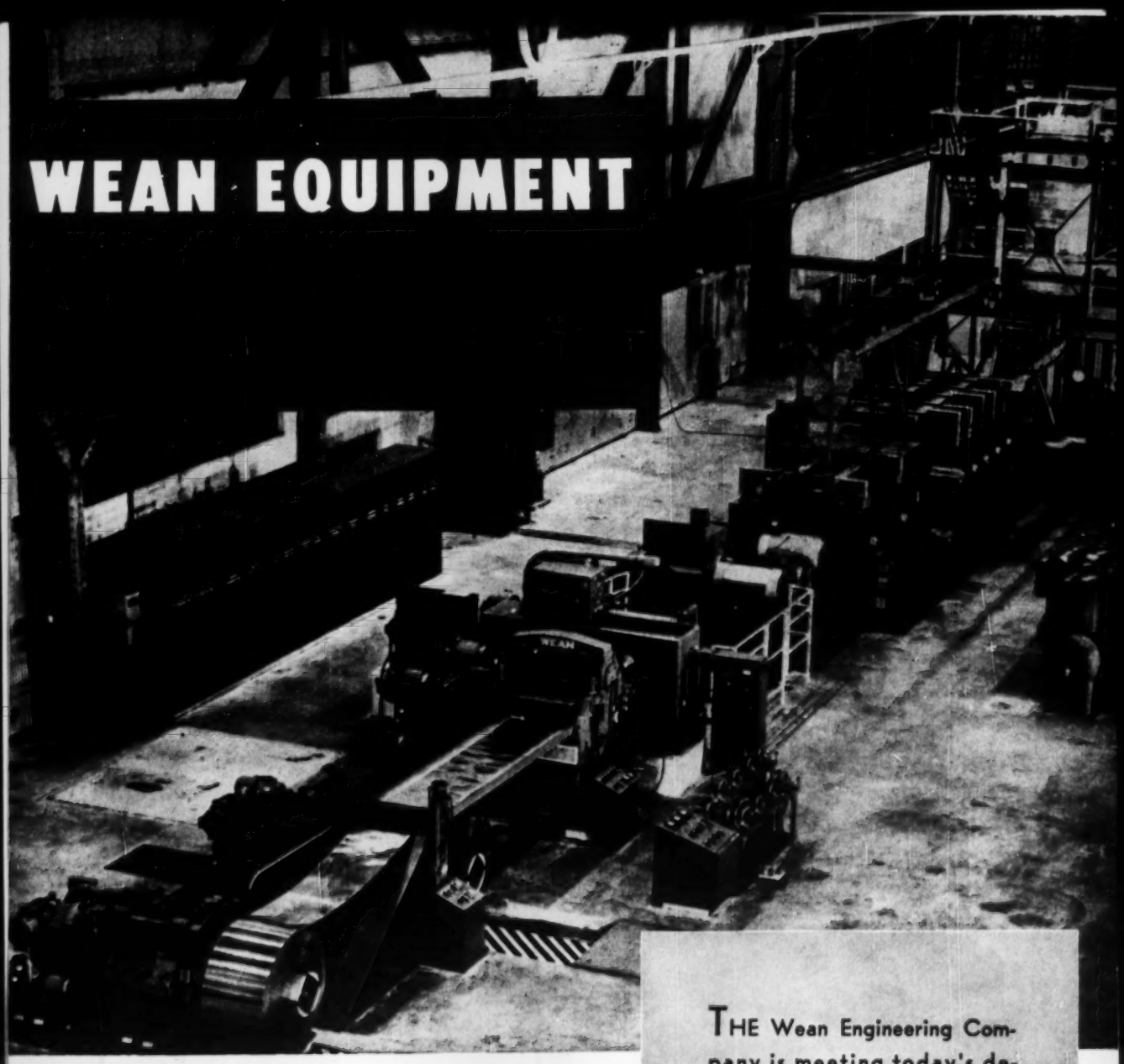
Be sure you specify Farval for your equipment. You'll be money ahead! Write for free Bulletin 26. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



KEYS TO ADEQUATE LUBRICATION—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.

Towering 226 feet in the air you see one of the 12 U. S. Steel blast furnaces at Gary, Indiana, all Farval lubricated. Inset shows Farval grease lines which deliver clean lubricant to the distributor. Photographs courtesy of United States Steel Corporation.



THE Wean Engineering Company is meeting today's demands for equipment to produce tin plate and zinc coated strip steel with light coatings by the electrolytic method; also equipment to produce chemically treated black plate and strip steel. Equipment for coating strip steel with zinc and other materials by the hot dip method is also available.

The WEAN ENGINEERING COMPANY, Inc.

WARREN ---------- OHIO

Associate Company—Wean Equipment Corp.—Cleveland, Ohio

SPECIALISTS IN SHEET, TIN AND STRIP MILL EQUIPMENT